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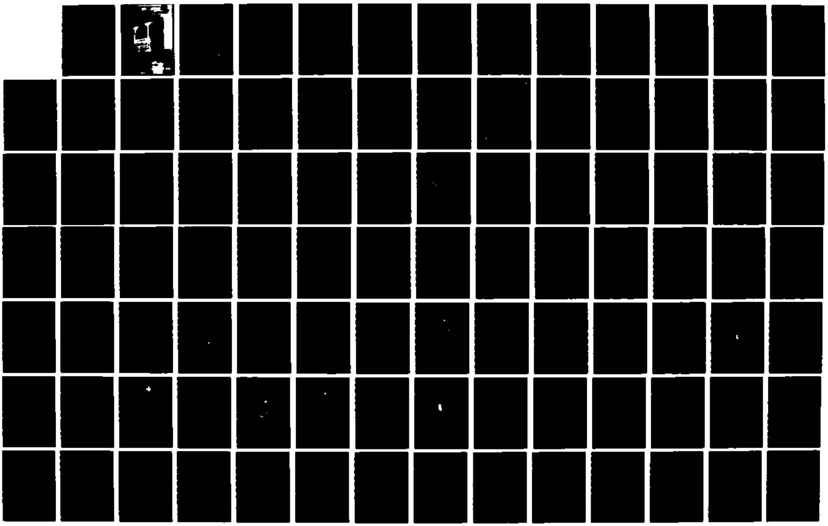

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FINAL REPORT

ENERGY EMERGENCY DISTRICTS
Concepts and Applications

by Robyn Boyer Stewart

June, 1985

for Federal Emergency Management Agency
Washington, D.C. 20472
Contract No. EMW-83-C-1138
FEMA Work Unit 2311-F

6

Detachable Summary

Approved for Public Release: Distribution Unlimited

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Detachable Summary

ENERGY EMERGENCY DISTRICTS: CONCEPTS AND APPLICATIONS

The primary objective of this research effort is to assist the Federal Emergency Management Agency (FEMA) in developing and evaluating the Energy Emergency District (EED) concept. EEDs were initially defined as units of analysis for performing a number of functions outlined in an earlier FEMA contract study. The functions to be performed by EEDs were as follows:

1. To conduct and maintain a comprehensive inventory of locally and regionally available conventional and alternate fuel sources, energy technologies, and energy conversion equipment, to include power facilities, prime movers, motors, cogeneration systems, critical components, supplies, and necessary skills and personnel who have them.

2. To identify, prior to an emergency, priority energy users and critical facilities in the event of a crisis or central system disruption and to conduct local training programs for use of existing alternate facilities and equipment.

3. To coordinate available funding and develop stockpiles for key energy components, fuel storages, parts and alternate equipment which would be needed in an emergency.

4. To serve as a local coordinating agency for the allocation of energy resources in an emergency.

This report describes the development of a number of models of the EED concept and also explores potential applications of the concept for enhancing emergency management procedures.

Analyses of research studies related to energy system operations and vulnerability, special district formation, and emergency management and preparedness concepts were combined with interviews with California utility officials and state and local government emergency managers to develop background for forming models of the EED concept. Part I provides some of this background material, which describes the problems that energy emergency districts might address, and a summary treatment of the various private and public organizations who share responsibility for energy resource emergency preparedness.

Part II describes the mission, goals, scope and methods of the California Energy and Emergency Preparedness Project. Funded by FEMA "to explore an innovative concept, that of Energy Emergency Districts, by use of an innovative process, that of collaborative problem solving," the Project convened over 100 selected individuals at a two-day conference to try to reach consensus on the design and advisability of forming EEDs. The results and the implications drawn from the proceedings are also given in Part II.

Part III stems from the outcomes and the lessons learned at the conference, from the discussion in Part I of existing organizations, and from interviews with energy providers and emergency managers to suggest variations on the EED concept, and to outline programmatic approaches to energy resource emergency preparedness. The outline proposes developing the SERICEP Program (State Energy Resources Inventory for Coordinated Emergency Planning) in which each state would be considered a unit of analysis for purposes of conducting energy resource inventories. SERICEP would be a cooperative private/public venture, and use information technology, multi-entity coordination concepts, and cartographic technology for conducting the resource assessments. The outline further suggests the development of National Emergency Energy Inventory Districts (NEEIDS), to be activated for national-level emergencies only. NEEIDS would use existing National Electric Reliability Council (NERC) regional boundaries as units of analysis for compiling resource inventory data. Costs and benefits of data collections would be balanced, with an emphasis on building on existing reporting systems.

Part IV, titled "Opportunities for Further Research," suggests some research areas and possible strategies for more thoroughly developing the EED concept, as well as for implementing it. These suggestions include:

- Modification of FEMA's Integrated Emergency Management System (IEMS) process to include specific energy resource assessments.
- Development of prototype approaches for conducting inventories using the Southern California Earthquake Preparedness Prroject five-county planning area as a unit of analysis.
- Conducting research on grid-independent applications of alternative energy technologies for use as stand-by emergency capability.
- Survey of all states' emergency services operations to determine the nature and extent of states' organizational relationship with energy providers.

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This final report describes the development and evaluation of models of the Energy Emergency District concept, and also explores potential applications of the concept for enhancing emergency management procedures.

Part I provides summary descriptions of the problems which originally gave rise to the EED concept. A comprehensive description of the public and private organizations who share responsibility for emergency energy

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resource preparedness, from the national to the local level, is given.

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- Conducting research on grid-independent applications of alternative energy technologies for use as stand-by emergency capability.
- Survey of all states' emergency services operations to determine the nature and extent of states' organizational relationship with energy providers.

PREFACE

This is the final research report for the Federal Emergency Management Agency (FEMA) Contract Number EMW-83-C-1138. The work is part of a continuing research effort (Work Unit 2311-F) on emergency resource preparedness by the FEMA Office of Resources Preparedness.

The report was prepared under contract to the California Governor's Office of Emergency Services. Although the content is the sole responsibility of the author, the research itself was a collaborative effort. The author wishes to gratefully acknowledge the following individuals who dedicated substantial amounts of time, energy, and special effort to the conduct of the work:

Mr. James W. Kerr, Project Monitor; Mr. William Medigovich, Director, California Governor's Office of Emergency Services; Mr. Elmer Kaprielian, Vice President, Electric Operations, Pacific Gas & Electric Company; The Energy and Emergency Preparedness Project Advisory Board, Conference Participants and Staff.

This report is respectfully dedicated to Albert E. Lockhart, Assistant Director, Governor's Office of Emergency Services, for his unflagging guidance and support.

Robyn Boyer Stewart
June, 1985

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INTRODUCTION AND OVERVIEW

The primary objective of this research effort is to assist the Federal Emergency Management Agency (FEMA) in developing and evaluating the energy emergency district (EED) concept. This report describes the development of a number of models of the EED concept and also explores potential applications of the concept for enhancing emergency management procedures.

Analyses of research studies related to energy system operations and vulnerability, special district formation, and emergency management and preparedness concepts were combined with interviews with California utility officials and state and local government emergency managers to develop background for forming models of the EED concept. Part I provides some of this background material, which describes the problems that energy emergency districts might address, and a summary treatment of the various private and public organizations who share responsibility for energy resource emergency preparedness.

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ENERGY EMERGENCY DISTRICTS:
CONCEPTS AND APPLICATIONS

PART I: BACKGROUND

1.1 Introduction

The origins of the Energy Emergency District (EED) concept can be found in an earlier Federal Emergency Management contract study.[1] An alternative approach to emergency energy resource management was proposed to mitigate the effects of natural or man-caused disasters on the nation's energy supply, production, and distribution systems. Called "Defense Energy Districts," these entities would be created and empowered to inventory, stockpile, maintain, and allocate energy resources in the event of a large-scale disaster or war. A reliance on small-scale, renewable resource-based technologies, developed at the local level, was emphasized as an alternative to centralized, interconnected networks.

The referenced report provided limited direction or insight as to the nature and scope of the proposed districts. Questions were not addressed in the initial FEMA investigation, such as: "Who would be in charge?" "What conditions must pertain to activate such a district?" "How might the most appropriate (and feasible) geographical, political, and technological boundaries be configured?" "What is in place now, and is such a district necessary?" "Who would benefit (and who would not) from a special energy district?"

As directed by FEMA, the Scope of Work for the current research is to "explore an innovative idea, that of Energy Emergency Districts, using an innovative method, that of the Collaborative Problem Solving Process." Part I of this report has been developed to provide a background and contextual foundation for the exploration of the Energy Emergency District concept. The problem of energy resource and system vulnerability to disruption from natural and man-caused disasters, which gave rise to the EED concept, is briefly treated. The various institutions, both private and public, which share responsibility for emergency energy resource preparedness (and for post-event recovery) are outlined in order to provide answers to the questions, "What is in place now?"

and "Who would benefit (and who would not)?" The interplay, the gaps, and the continuing challenges of emergency resource management are outlined as they relate to the development of the EED concept. An appreciation for the problem and for what is currently in place to address the problem, can lead to a more thorough evaluation of the EED concept and of suggested applications.

1.2 The Problem

The United States is a nation of centralized, inter-connected, high-technology networks, vulnerable to disruption from natural and man-caused disasters.[2] In particular, the national electric grid and petroleum and natural gas grids are critical to, and interdependent with, almost all aspects of today's high-technology society. We depend on electric power for national defense, communications, for industrial production and distribution, for powering computers, which in turn run the nation's financial, service, and many other industries.[3-6]

Vulnerability of U.S. energy systems has been characterized in several studies, in terms of the centralized and dependent nature of the systems themselves,[7-9] and in terms of the various external factors that can and do affect the functioning of the systems. For example, weather and severe storms have historically impacted the nation's electric grid system, at times rendering entire regions inoperative.[10-12] Another external factor is that of the potential for terrorist attack or mischief at any point in the supply-production-distribution network.[13-19] The potential for disgruntled employees or foreign agents to sabotage energy facilities and/or their distribution networks [20,21] and the hypothesized effects of electromagnetic pulse (EMP) on the national or regional grids[22-25] represent additional vulnerability factors.

At issue is whether or not the nation's energy providers can meet the needs of critical industries and facilities, and/or priority users (police, fire, medical, etc.) in the event of a major disaster or war. Effective civil defense and emergency preparedness are contingent on available supplies of

energy, trained responders, and practiced plans. According to Congressional analyses, the nation is still not adequately prepared to respond to major electrical or oil import emergencies.[26-28] From the local to the federal level, most emergency contingency plans assume a reliable and available supply of energy, irrespective of the type (electrical, fuel, heat, etc.). This is perhaps an unsafe assumption, due in part to some of the inherent and external vulnerability factors discussed above. An additional factor, is that there is an historical separation of procedures and cultures between energy providers (primarily private sector institutions) and the emergency preparedness community (primarily government institutions). Although each share a common responsibility for the management of energy resources in an emergency, there is a communication gap between the energy supplier and the emergency management communities in both pre-incident planning and post-event recovery that must be bridged for effective preparedness. There are, of course, exceptions to this, examples of close, integrated working relationships; they will be discussed in the next section.

Given this "separate but equal" situation, the formulation of Energy Emergency Districts takes on a new dimension. It is possible to arbitrarily define boundaries, assign tasks and responsibilities, and to expect performance independently of any analysis of the in-place system. But this ignores basic tenets of good management and good government. Without the understanding and cooperation of the persons who would be responsible for implementing and carrying out EED functions (however they might be configured or tasked), the effectiveness and usefulness of the effort will be limited.

The next section outlines the various public and private institutions who share responsibility for emergency energy resource preparedness. It includes governmental and private organizations at all levels of operation. A summary description of each organization's role and responsibilities for emergency-related operations is provided. This outline is relevant to the present study because it provides a context for developing and evaluating EED models. As indicated in earlier research to develop innovative concepts:

> When any new or modified concept of operations or management system is conceived and analyzed, it faces the legacy of existing procedures and organizational prerogatives. Present organizations have attributes and legal precedents that have been demonstrated over time to be feasible and effective. Thus, it is incumbent on the analyst to justify the necessity and benefits and political operating feasibility -- of proposed modifications.[29]

1.3 Energy and Emergency Preparedness: The Federal Government's Role.

1.3.1 Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) is an independent executive agency serving as a single point of contact within the federal government for emergency management activities. The emergency-related programs and responsibilities of five agencies were merged into FEMA by President Carter's Reorganization Plan No. 3 of 1978 and by Executive Orders 12127 (March 1979) and 12148 (July 1979). These agencies included (1) the Defense Civil Preparedness Agency, Department of Defense, (2) the Federal Preparedness Agency, General Services Administration, (3) the Federal Disaster Assistance Administration, Department of Housing and Urban Development, (4) the U.S. Fire Administration, Department of Commerce, and (5) the Federal Insurance Administration, Department of Housing and Urban Development. Additional functions, such as oversight of the Federal Emergency Broadcast System (from the Office of Science and Technology Policy, Executive Office of the President), were also transferred to FEMA. FEMA is dedicated to establishing and maintaining a comprehensive and coordinated emergency management capability in the United States to plan and prepare for, respond and recover from and, most importantly, mitigate the effects of emergencies, disasters, and hazards ranging from safety in the home to nuclear attack.[30]

FEMA maintains regional headquarters throughout the nation's ten federal regions. Federal Regional Centers have been developed within each of the ten regions, some of which are in underground facilities. These facilities have been designed to withstand substantial hazard effects and are equipped to maintain independent operations over an extended period

of time. Their function is to coordinate federal activities for survival and subsequent recovery (e.g., receive and transmit warnings, predict hazards, prepare situation reports, etc.). They also serve as communication links with state governments and central federal facilities.[31] Table 1.1 lists the location of the Federal Regional Centers. An asterisk (*) indicates those facilities that are FEMA underground, bunker facilities.

Table 1.1

FEDERAL EMERGENCY MANAGEMENT AGENCY
REGIONAL CENTERS

Region I	Boston, Massachusetts *
Region II	New York City, New York
Region III	Philadelphia, Pennsylvania (Facility at Olney, Maryland) *
Region IV	Atlanta, Georgia (Facility at Thomasville, Georgia) *
Region V	Chicago, Illinois
Region VI	Dallas, Texas *
Region VII	Kansas City, Kansas
Region VIII	Denver, Colorado *
Region IX	San Francisco, California
Region X	Seattle, Washington *

At national headquarters in Washington, D.C., FEMA is organized into five directorates. These directorates are: (1) Training and Fire Programs, (2) Federal Insurance Administration, (3) National Preparedness Programs, (4) State and Local Programs and Support, and (5) Emergency Operations. The National Preparedness Programs Directorate is responsible for overall

civil defense plans and policy development, and the State and Local Programs and Support Directorate develops and implements civil defense program components that are deployed at state and local levels. Within the National Preparedness Programs Directorate are the Offices Of (1) Federal Preparedness, (2) Civil Preparedness, and (3) Resource Preparedness. Within the Office of Resource Preparedness are the (1) Natural Resources, (2) Mobilization Resources, and (3) Human Resources Divisions. Figure 1.1 is FEMA's organization chart, as approved October 15, 1984. Figure 1.2 is an organization chart depicting the National Preparedness Program Directorate.

FEMA's overall mission is directed toward assisting state and local governments to improve their readiness for life-saving operations and mitigation of damage resulting from natural and manmade disasters and nuclear attack. FEMA is responsible for coordination of population protection, continuity of government, and all resource allocation aspects of national security emergencies. Under Executive Order 11179, FEMA is responsible for administering and coordinating the National Defense Executive Reserve program (NDER). The NDER program is designed to recruit and train civilian executives and professionals to fill key positions that would be needed during national emergencies. Although the Department of Energy is responsible for maintaining an executive reserve program of energy professionals, FEMA is responsible for coordinating DOE's efforts with other federal agencies. FEMA also establishes recruitment and training standards, issues rules and regulations, and submits an annual report to the President on the status of the NDER program.

Through a comprehensive and innovative approach, the Integrated Emergency Management System (IEMS), FEMA seeks to carry out its mission. The following summary of the IEMS program is instructive, for it provides insight into how the Energy Emergency District concept might be useful as a management tool for assessing, managing, and allocating emergency energy resources:

ORGANIZATION
FEDERAL EMERGENCY MANAGEMENT AGENCY

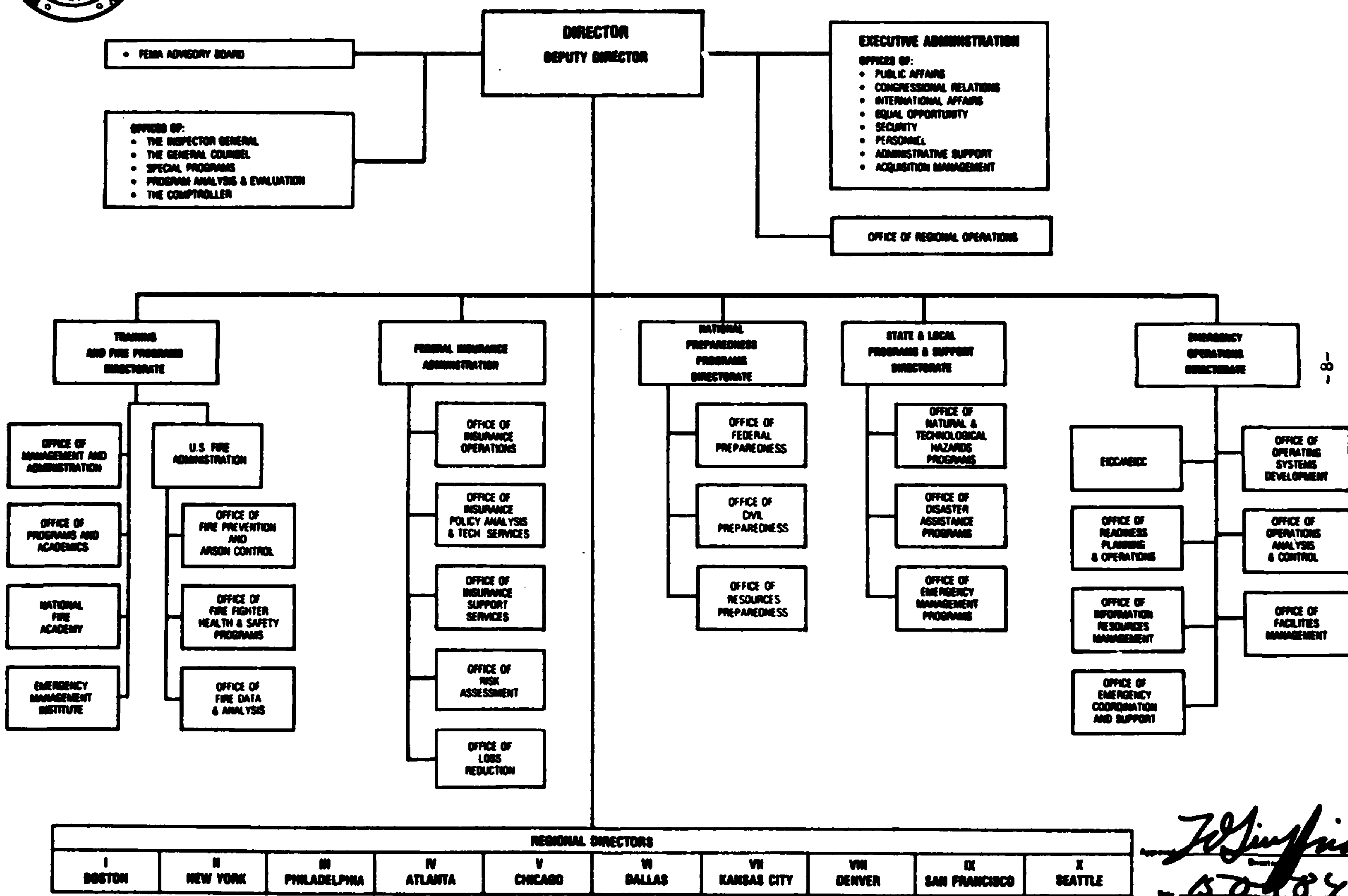

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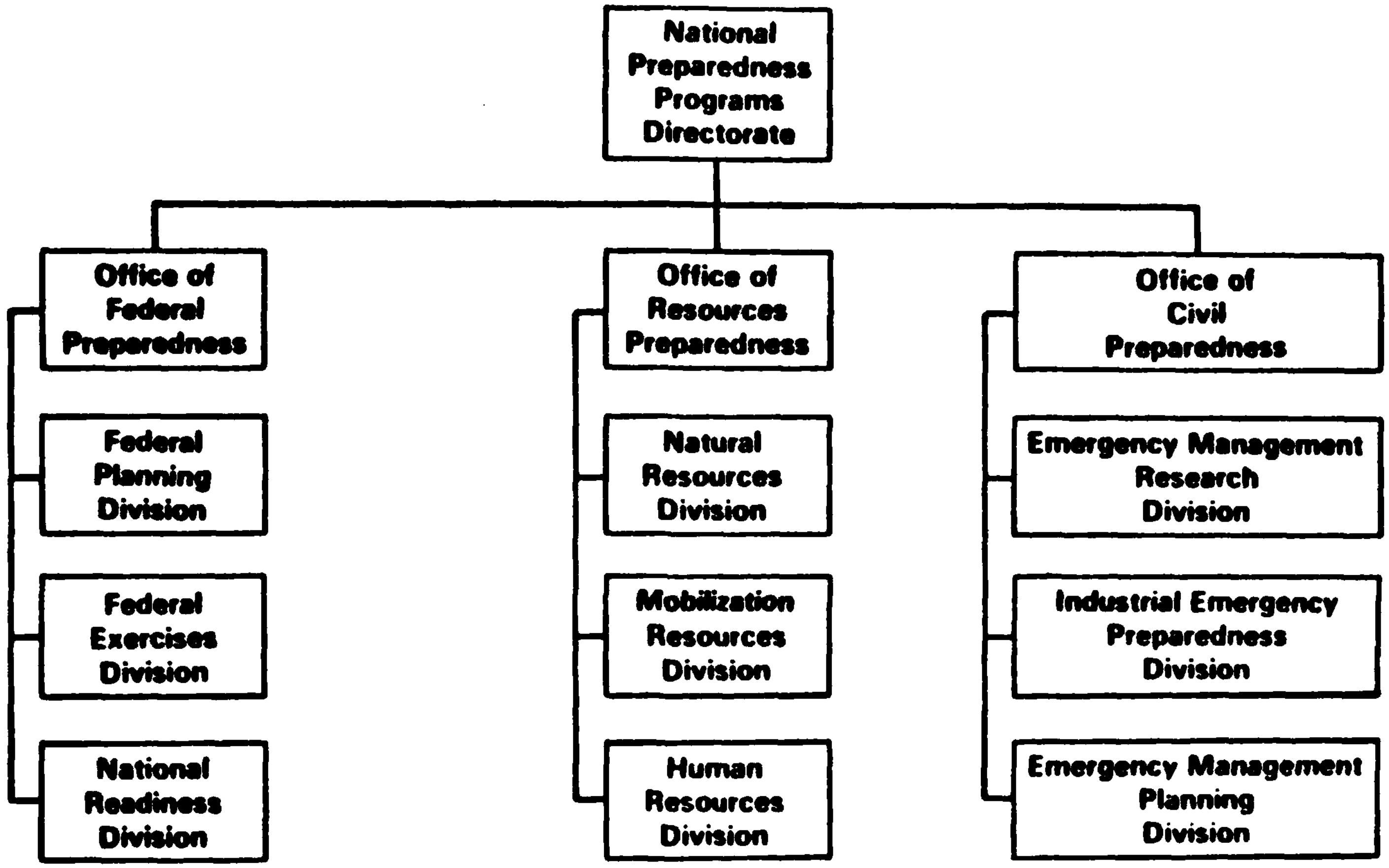
Figure 1.1
FEMA ORGANIZATION

Figure 1.2

FEMA NATIONAL PREPAREDNESS

PROGRAMS DIRECTORATE

NATIONAL PREPAREDNESS PROGRAMS DIRECTORATE



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IMPLEMENTATION DATE: Oct. 1, 1984

In December 1982, FEMA adopted an Integrated Emergency Management System (IEMS) as a means of administering its programs and intergovernmental coordination responsibilities more effectively. The system structures all FEMA activities into a unified national process that applies common management functions to the degree of capability needed to manage any emergency conditions that threaten public health and safety, irrespective of the nature or cause.

The system applies to all levels of government and the private sector, the full spectrum of potential hazards, and emergency mitigation, preparedness, response and recovery activities.

IEMS also focuses on the integration of federal preparedness programs, on improving coordination among the federal agencies involved in the response to various emergencies, and on the linkage between federal, state and local preparedness in such areas as resources management, continuity of government, training, and resource mobilization for major domestic and national security emergencies.

Other principles that apply to the development of IEMS include providing maximum flexibility to state and local governments; sharing of resources; gaining experience for unusual emergencies through similar, more frequent disaster management; and integrating emergency management planning into mainstream federal, state and local government planning and decision-making processes. The system builds on the foundation of existing emergency plans, systems, and capabilities toward applications that are coordinated, acceptable, effective, efficient, and predictable.

1983 was a transition year during which IEMS was conceptualized; 1984 one of field testing and refinement; and 1985 is to be FEMA's first year of general integrated emergency management implementation.

Accomplishments to date include issuance and trial of a field planning system that includes all-hazards analysis, capability assessment, multi-year program and budget plan, an automated National Emergency Management System (NEMS), and installation of an Emergency Information and Coordination Center that operates 24 hours per day.

IEMS enables FEMA to fulfill its purpose and charter. It serves the full intent of all agency responsibilities as reflected in Executive Order 12148, Presidential National Security Decision Directives, and all Executive Orders and Federal Authorities under which FEMA operates.[32] [Emphasis Added]

The IEMS approach is being touted as FEMA's response to President Reagan's 1982 National Security Decision Directive, stating that civil defense is an essential ingredient of U.S. nuclear deterrent forces and a

national priority.[33] IEMS is also described as a means of organizing and managing "generic" emergency plans throughout the states. Where once hazard-specific plans (with voluminous and questionably useful annexes attached) were suggested, now generic plans capable of effective action for all hazards, are being developed. As indicated in the IEMS policy statement quoted above, 1983-84 were the years of field-testing "all-hazards analyses" and "capability assessments."

The IEMS process entails analyzing (identifying) all the actual and potential hazards for a given jurisdiction. Then that jurisdiction's capabilities (personnel, equipment, resources, legal authorizations, etc.) to deal with the hazard/problem are assessed. A number of "shortfalls" (needs minus capabilities) are indicated and then used to structure Multi-Year Development Plans (MYDPs). These plans are then to be used by FEMA to help determine the nation's level of preparedness for multi-hazards, and for making requests to Congress for appropriations.

In the course of conducting background research for the current work on Energy Emergency Districts, IEMS data collection officials were asked whether, or to what extent, jurisdictions had indicated "energy" as an actual or potential shortfall in their preliminary IEMS (1984) assessments. IEMS managers responded that no state or local government had indicated "energy" as a shortfall. This was attributed to the fact that the question had not been specifically asked.[34]

Given FEMA's overall responsibilities to determine the availability and operability of the nation's resources for "national security emergencies," it would seem that some means of systematically inventorying the various resources would be useful. Within FEMA's State and Local Programs Directorate, Office of Emergency Management Programs, Standards and Assessments Branch, efforts have been initiated to develop a prototype automated "Status Reporting and Evaluation System" to meet management decision-making needs. This system entails the use of information technology (computers) and IEMS-related management principles. The system consists of three components, all of which parallel and complement IEMS processes:

- A hazard assessment module that will evaluate and display the full scope of hazards to be faced in different (national) geographic areas;

- A capability assessment module that will collectively assess the state of emergency preparedness at all government levels for combating these hazards;

- A budget resources module that will evaluate and track the spending of federal budget dollars intended to remedy deficiencies ("shortfalls") in emergency response capability at state and local levels.

As will be explored in more detail later, the concept of an Energy Emergency District, a defined, discrete "unit of analysis" for assessing energy capabilities against assessed hazards, and a means of quantifying (or qualitatively analyzing) the energy "shortfalls" for a given jurisdiction, might contribute to the specific goals of FEMA's IEMS program, as well as to the larger goals of national emergency preparedness.

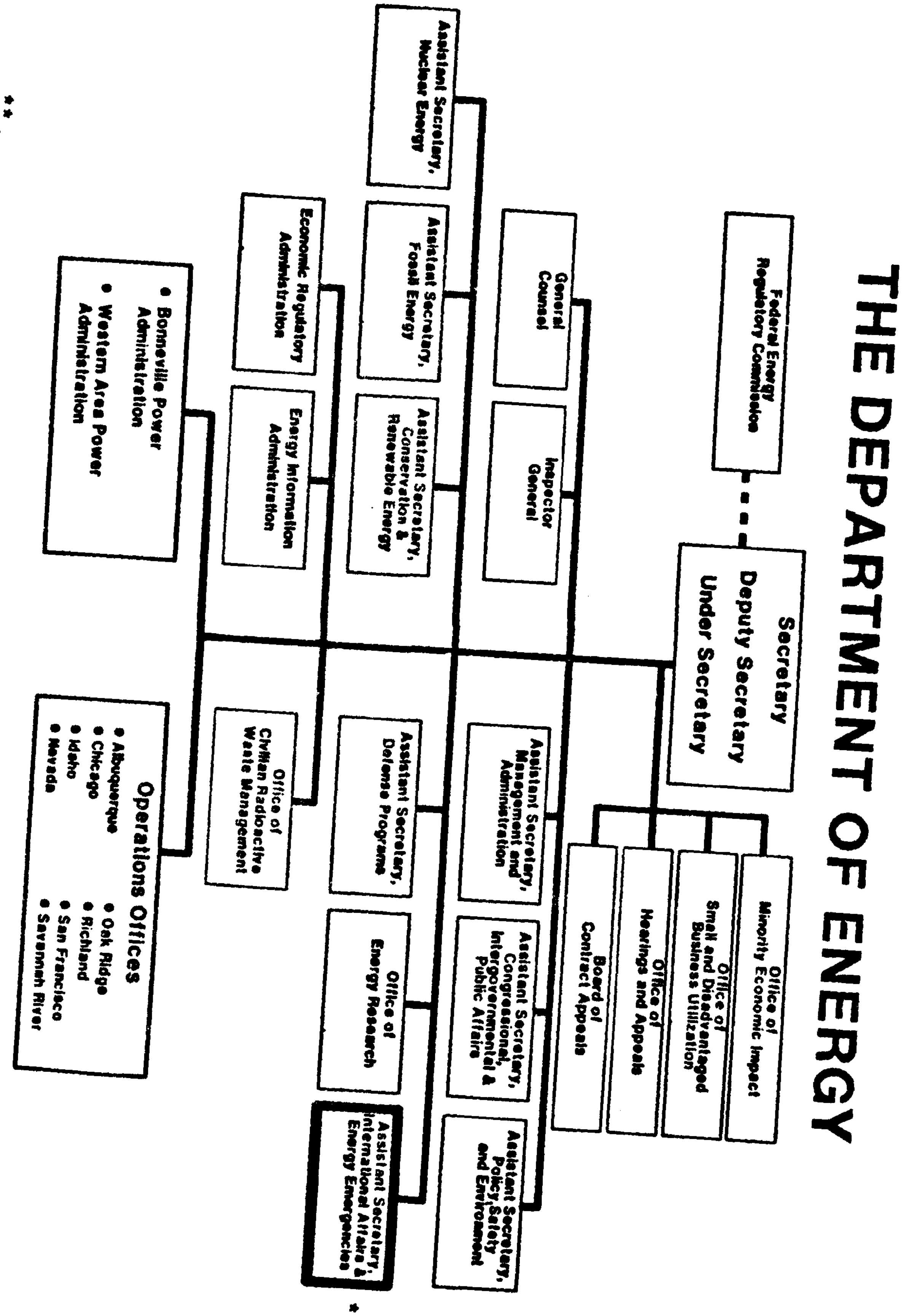
1.3.2 Department of Energy

The Department of Energy (DOE), under Executive order 11490, October 28, 1969, as amended, is required to prepare national emergency plans and to develop preparedness programs covering electrical power generation, transmission, distribution, and utilization. This Executive Order is, in part, based on the National Security Act of 1947, the Defense Production Act of 1950, and the Federal Civil Defense Act of 1950, as amended. Currently, the Assistant Secretary for International Affairs and Energy Emergencies is responsible for electric emergency planning.[35]

Under the Assistant Secretary are the Office of Energy Emergency Operations (OEEO), the Emergency Electric Power Administration (EEPA), and the Emergency Electric Power Executive Reserve program (EEPER). Figure 1.3 is an organizational chart of the DOE.

Figure 1.3

DOE ORGANIZATION



** Executive Reserves Units (EEPER, EPGER, ESFER) are within this Assistant Secretarial office. (6/85)

Figure 1.4 is an organizational chart of the Assistant Secretary for Environmental Protection, Safety, and Emergency Preparedness' various responsibilities.

The OEEO, in partial response to Congressional criticism, has developed the "Energy Supply Vulnerability Assessment Program." The purpose of the program is to "develop technically sound assessment(s) of the Nation's vulnerability to major disruptions of electrical power, gas, or petroleum caused by sabotage, accidents, or natural disasters"; and to "provide a factual basis for developing a government/industry strategy on practical steps to reduce such risks."[36] The scope of the program encompasses vulnerability assessments for electric power, natural gas, and petroleum; energy systems. To date, the program has focused exclusively on disruptions caused by terrorists and saboteurs. At some future point, it is expected that the program will be extended to cover vulnerability to; selected types of accidents or natural disasters. All data collected and all results are classified to ensure safety to the participating utilities and oil companies.[37] It can only be presumed that these studies may serve as a basis for developing contingency plans for a regional or national service disruption.

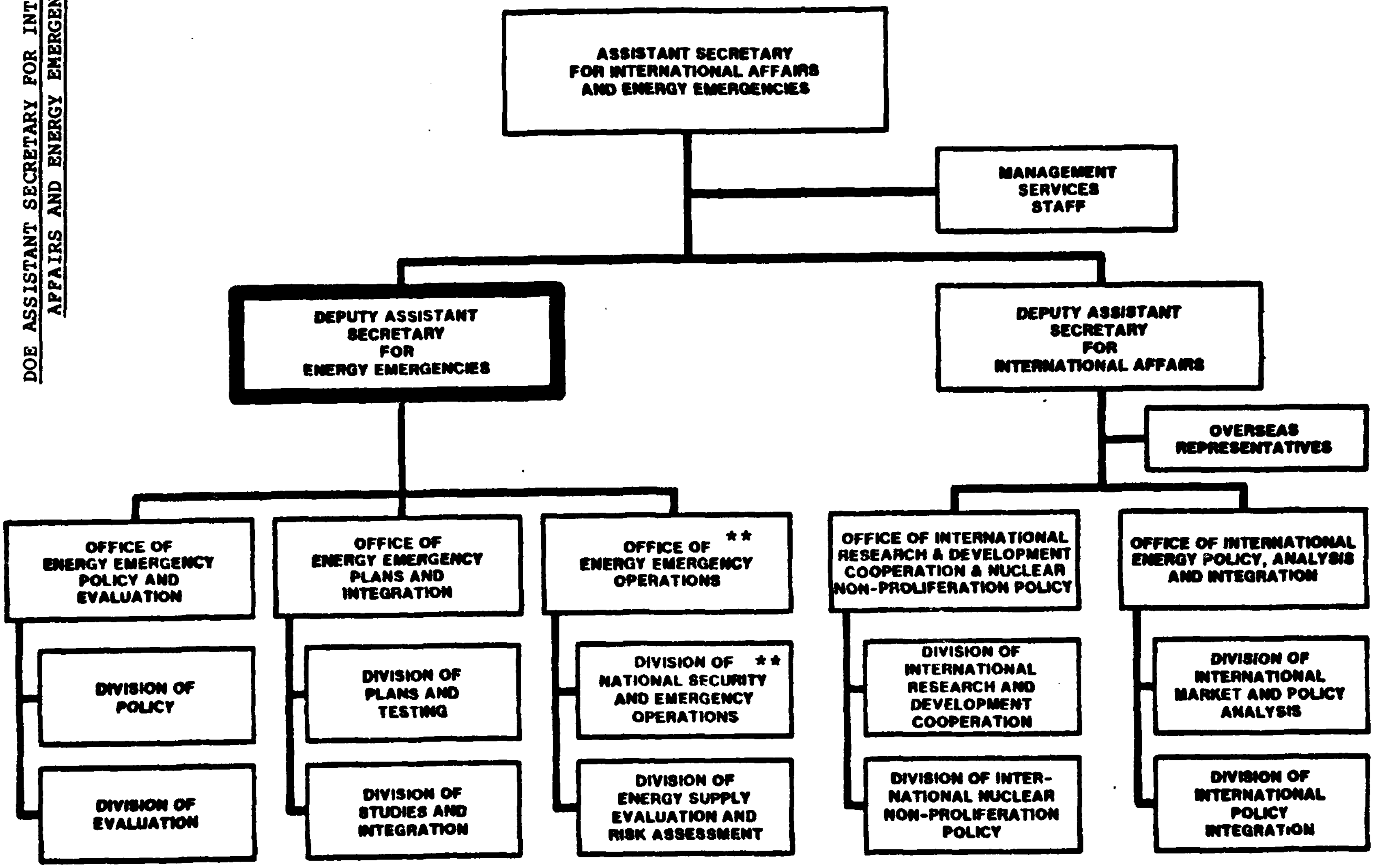
This data collection effort should be distinguished from the requirements of Section 202(a) of the Federal Power Act, which authorizes and directs the Department of Energy to collect information regarding the generation, transmission, and distribution of electric energy and to report problems and developments of the electric utility industry to Congress. The Secretary of Energy, under the aforementioned provisions, has the federal responsibility for receiving reports of major electric utility system emergencies. This responsibility has been delegated to OEEO by the Secretary. The information collected by this process is not confidential nor classified.[38]

Another OEEO program of interest is the "Electric Power System Critical Components" project. As stated in the program's Background statement:

> The DOE is responsible for determining whether adequate and reliable supplies of electric power will be available which may be critical

Figure 1.4

DOE ASSISTANT SECRETARY FOR INTERNATIONAL AFFAIRS AND ENERGY EMERGENCIES



** Executive Reserves Units (EEPER, EPGER, ESFER) are within these offices. (6/85)

to the security and welfare of the Nation. Therefore, DOE, coordinating with several government agencies, including the Department of Defense, and the electric utility industry, is examining the possibility that sabotage or terrorism activity may produce an outage of sufficient duration to seriously impair critical military bases, defense industries, or other functions essential to national security and welfare.

> DOE is concerned with the time required to restore an adequate supply of electric power following acts of sabotage or terrorism which damage a number of bulk power supply facilities (i.e., generating plants, transmission lines, transmission substations). As part of this overall program, DOE will examine strategies for assuring that the availability of critical replacement components permits timely restoration of electric power service following damage by saboteurs or terrorists to a number of bulk power facilities.[39]

One of the key emergency-related responsibilities of the office of Energy Emergency Operations is that of administering the Emergency Electric Power Administration (EEPA). Formerly the Defense Electric Power Administration (DEPA), housed within the Department of Interior, the current status of EEPA has been described as "inadequate for establishing plans to allocate and curtail power on the basis of national needs, and to provide for the restoration of the electrical system."[40] Discussions with OEEO administrators at the Department of Energy in Washington indicate that the once-extensive industry-developed field organization is barely active.

An Electric Power Emergency Handbook[41] was developed for DOE in 1980, but it is still considered a draft. Since 1977, the electric utility industry has strongly opposed the expansion of EEPA's role from strictly war-related activities to its current responsibilities which include short-term, less-than-national emergencies such as coal strikes, major storms, oil embargoes, etc. The industry also opposes the attempts by the DOE to expand EEPA's membership to include user, state and local representatives. The conclusions made by an industry-funded report are instructive:

> In final conclusion, the current EEPA plan for electric preparedness has almost no chance of being successful. With a headquarters incapable of providing central direction or control and a field organization inadequately manned, trained and motivated, control areas and utilities would be on their own. Restoration of service would, by default, be in accordance with each utility's own concept of priorities with little or no coordinated direction from higher authority.[42]

Another of the DOE's responsibilities for emergency preparedness is the Emergency Electric Power Executive Reserve program. This is one of the three energy-related adjuncts to FEMA's National Defense Executive Reserve program. (There are also reserve organizations for petroleum and gas executives and for professionals in the solid fuels industry.) The energy-related reservist programs are administered by the DOE. This program, like EEPA, is in the process of slowly being revitalized, but it, like the NDER, remains thwarted by federal conflict-of-interest laws and by lack of adequate staff.

1.3.3 Department of Defense

The Department of Defense (DOD) has primary responsibility for defending the interests of the United States, both at home and abroad, against any foreign or domestic enemy. The Department of Defense is the nation's largest consumer of energy resources, with over 40,000 military installations or bases scattered throughout the country.

It has long been understood that the military can and would provide assistance to civil authority in the event of a major disaster (assuming the requisite Presidential declarations, etc. have been made). In particular, the advent of a nuclear war, in which civil defense plans and procedures would be activated, is an example. As described in an article in *Military Review*:

> Aside from the formal priority designators applied to CONUS [Continental United States] units to show their availability for employment in support of civil defense, fundamental priorities governing troop commitment have been established. The first priority calls for mounting offensive and defensive actions. Second is assisting civil authorities in assessing and reporting damage, and third is continuity of operations, troop survival, and rehabilitation of essential bases. ...Emergency tasks for military forces committed to civil defense would likely be to assist civil authorities to restore civil operations; <u>restore facilities, utilities, transportation, communications, power, fuel, water, and other essential facilities</u>....[43] [Emphasis added]

The degree to which military installations have developed a margin of energy and other resource self-reliance might make a difference in that facility's ability to recover and to render assistance.

A growing concern in developing emergency plans for national preparedness is the degree to which a state or local government's contingencies for use of resources will conflict or not with federal needs. Theoretically, the military is empowered, through the President and the Defense Production Act, to commandeer resources as needed to maintain the nation's level of readiness. With respect to electricity, and depending on the nature and severity of the emergency, the possibility exists that vital local needs, such as hospitals, fire and police services, etc., might have to do without so that critical defense contractors or Strategic Air Command bases might be powered.

In this context, the Assistant Secretary of Defense recently let a Request For Proposals for a research effort that will "assist the DOD with earthquake preparedness and response measures that will ensure prompt and coordinated Federal assistance to enhance <u>management and allocation of resources to facilitate emergency operations and recovery</u> and reduce the impact of catastrophic earthquakes on national defense capability (military and industrial).[44] [Emphasis added]

The research is divided into two tasks: the development of an operations manual for defense industries and DOD activities, and a DOD preparedness plan for military installations and defense industries. Of particular interest is the intended exploration of the question, "What priority can be expected for emergency repair operations for public utilities, such as communications, gas, and electricity, when they are required to support national defense needs (military and industrial)."[45] This question must, of course, be assessed in the context of the many other competing local, regional and state needs for those same resources.

It would seem then that the Energy Emergency District concept might have its greatest applicability and utility not only as a unit of analysis, but as a way of identifying a hierarchy of energy users and their needs per specific emergency/disaster scenarios (e.g., the predicted earthquake in Southern California along the San Andreas Fault, magnitude 8.3 Richter.)

Thus far, this report has identified three of the major federal organizations who have a direct interest in the assessment and deployment of

energy resources for a national emergency. There are others, such as the Department of Interior and the Bureau of Reclamation. As will be shown in the remaining sections, the responsibilities for emergency energy resource preparedness extends into the states and on to the local level. Most importantly, the responsibility for providing the energy resources remains, for the most part, with the private sector. Any discussion or development of a concept, innovative or otherwise, to "enhance" their capabilities to do their job, must be cognizant of and compatible with that fact.

1.4 Energy and Emergency Preparedness: States' Role--The California Example

The Scope of Work for the research on which this report is based limited the exploration of the EED concept to the California example. Drawing from the organizational and institutional structures extant in California's emergency preparedness and utility company communities, models of the Energy Emergency District concept were forged by participants in those professions.

The following describes the various government organizations who share responsibility for emergency resource preparedness activities in California, from the state to the local level. California is said to have one of the most effective and efficient emergency preparedness operations in the nation. California is also noted for its championing of innovative approaches to problems. As will be seen, the combination of efficiency and innovation characterizes the efforts of many who share this responsibility.

1.4.1 Governor's Office of Emergency Services

The overall responsibility for emergency preparedness rests with government at all levels. In California the Governor has, by Executive and Administrative Orders, assigned emergency preparedness and operating responsibilities to various state agencies. Two organizations, the California Emergency Council and the Office of Emergency Services,(OES), have been created especially for performing emergency preparedness functions. Both organizations have been established by the California Emergency Services Act (CESA) to assume responsibility for coordinating the state's resources on an as-needed basis.[46] The Emergency Council

functions primarily as an advisory body to the Governor on all matters of statewide emergency preparedness. The Office of Emergency Services operates as an integral part of the Governor's Office and provides staff assistance to the Governor in carrying out his emergency responsibilities. Specific responsibilities of OES include:

1. Preparing and maintaining current, the California State Emergency Plan and associated readiness programs, and coordinating these with federal, state agency, and political subdivision plans and programs.
2. Determining requirements for, and assisting with the development of, co ordinating staffs, operating organizations, facilities, and systems req uired by the state and its political subdivisions in discharging their joint responsibilities during emergencies.
3. Assisting the Governor, during an emergency, with the direction and coo rdination of the activities of state agencies.
4. Coordinating with and supporting emergency operations conducted by, and under the leadership and direction of, local governments.[47]

OES provides guidance to other state agencies, and to local governments through the promulgation of the State's Emergency Plan.[48] This document outlines key procedures and necessary planning elements for all to follow. In a Gubernatorially declared emergency, the Governor is "in charge." Through a number of delegations and Executive Orders OES performs the critical role of coordinating, for the Governor, local requests for aid (as they are needed) for state and federal resources. Basic to California's emergency preparedness and response capabilities is the concept of mutual aid. This assumes that, in most cases, a local jurisdiction must exhaust its own resources first, before calling on its neighboring cities or counties, the state or the federal government for help.

The Office of Emergency Services has a critical role in coordinating requests for mutual aid, and has developed six Mutual Aid Regions as administrative mechanisms to enhance this coordination. Figure 1.5 is a map of California which depicts the OES Mutual Aid Regions. A Master

Figure 1.5

OES MUTUAL AID REGIONS

Mutual Aid Agreement has been adopted by most cities of California and by all 58 counties. This creates a formal structure within which each jurisdiction retains control of its own personnel and facilities that can give and receive help whenever it is needed. The state (through OES) is signatory to this agreement and provides available resources to assist local jurisdictions in emergencies.

Specific guidance, policies, and actions for the provision and management of resources is provided in the State's Emergency Resources Management Plan.[49] This stand-by document outlines the general roles and responsibilities of both private and public sectors "in the event of a civil emergency necessitating the State to act in the temporary absence of federal direction in carrying out certain national programs. . . and general resources management. While developed specifically for the contingency of nuclear attack, the procedures may also be applicable in case of major natural disasters requiring mobilization of State resources."[50]

Promulgated in January, 1968, the Emergency Resources Management Plan remains the primary reference for government and private sector interface of activities for a major disaster. However, at both the federal and state levels, government entities are invoked which no longer exist (the U.S. Department of Interior's Defense Electric Power Administration, and the state's Resource Priorities Board, for example) and as has been discussed in an earlier section, no viable, currently operable mechanism exists to replace them. The plan relies heavily on the private sector utilities to manage and provide electric power, gas and water resources in an emergency, with guidance and direction from the government.

Within the Governor's Office of Emergency Services, the Utilities Division has been established to coordinate emergency planning for the electric, gas and water utilities. In a state of extreme emergency, statewide direction of disaster operations of electric power utilities is provided by the Chief of the Utilities Division.

The Utilities Division was developed by the State Utility Policy Committee in the 1950's. This Committee was comprised of the CEOs and chief

operating engineers of California's major private utility companies (currently referred to as the California Power Pool). The Committee's primary purpose was to advise the Governor, and on his behalf to work with other state agencies to adopt policies and guidance to assure the application of compatible measures for the conservation, distribution and use of electric power to meet essential needs within the available supply. In a later section of this report, the structure and organization of the Utilities Division, a wholly private sector concern, will be discussed.

1.4.2 California Energy Commission

The California Energy Commission (CEC), through Governor's Executive Order 6 (January 24, 1980), is provided the authority to assess, prioritize, and allocate petroleum resources in California when a State of Emergency has been declared for use in a disaster area or in support of disaster mitigation operations. In addition, the CEC is required by the Legislature to develop and update the state Energy Shortage Contingency Plan (see California Public Resources Code, Sections 25700 et. seq.). The plan is to be used in responding to unanticipated shortages of oil, natural gas, and electricity. In general, the Energy Commission is responsible for coordinating the execution of energy shortage emergency plans with the Public Utilities Commission, energy producers and consumers, the Office of Emergency Services, and other public agencies.

The Commission's efforts to develop the current plan have been extensive, and the plan itself is based on the following work by the Contingency Planning Committee:

1) Participation in five energy shortage simulations;

2) Sponsorship of nine major hearings and conferences;

3) Publication of fourteen reports related to energy emergency preparedness;

4) The conduct of over fifty interviews with public and private representatives having direct experience with previous energy emergencies;

5) Assistance to thirty-three county governments in preparing gasoline emergency plans.

The contingency plan is described in three parts and includes five appendices. Part I, Overview of Circumstances Affecting the Design of a California Contingency Plan[51] describes California's physical, economic, and political ties to the international oil market. An in-depth discussion of California's vulnerability to future oil shortages is also provided.

Part II, Energy Shortage Management Strategies[52] presents a strategy for managing shortages of oil, natural gas, and electricity. Various crisis response measures applicable to petroleum shortages are analyzed and recommended or rejected on the basis of their effectiveness in reducing demand or preserving order against economic and political costs. Existing plans dealing with electricity and natural gas shortages are also described.

Part III, Executive Summary of The Operational Elements of California's Energy Shortage Contingency Plan[53] summarizes the five appendices representing the operational elements of the state energy emergency plan. The elements specifically described include (1) a state organizational structure for crisis management (Appendix A),[54] a process for collecting and disseminating information, (Appendix B),[55] measures for reducing energy demand (Appendix C),[56], a program for relieving fuel supply hardships (Appendix D),[57] and a program for distributing federal block grants (Appendix E).[58]

The plan assumes four objectives of a "successful emergency response." These objectives include:

1) Accurately identifying the nature and severity of the energy shortage with verifiable data and information;

2) Adequately informing the public of expected shortage impacts so that individuals and businesses can adjust to the emergency condition;

3) Properly implementing government's emergency program(s) at the appropriate time; and

4) Successfully administering emergency programs required by the federal government.[59]

Figure 1.6 provides a graphic overview of the CEC's contingency plan.

Even though contingency responses are cited for electricity and natural gas shortages in the CEC's overall plan, the main thrust of it relates to petroleum shortages caused by events such as an embargo, sabotage, or natural disasters. The plan invokes a phased response, and presumes a time frame (for instance, a month or more) in which a shortage can be predicted based on a current petroleum stocks' reporting system.

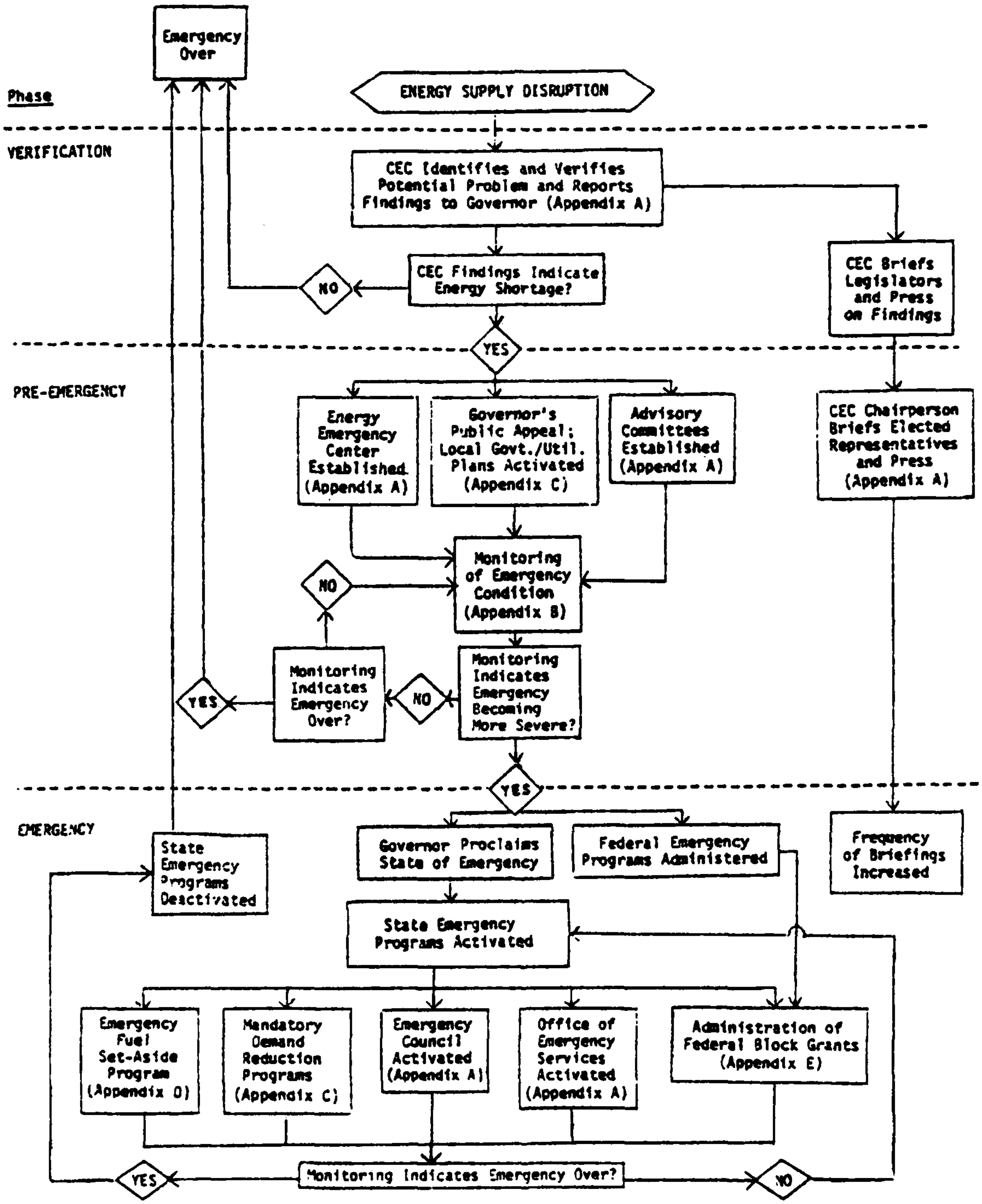
Nonetheless, the importance of electricity and natural gas is emphasized by appreciating the extent of California's dependence on these and other forms of energy. As stated by the plan's authors:

> Shortages of electricity and natural gas can create social and economic chaos to a degree exceeded only by petroleum shortages. Natural gas is in fact California's second most important energy source, supplying 32 percent of the primary energy, 44 percent of electricity generation, 43 percent of industrial/commercial energy use, and 69 percent of residential energy consumption. Electricity supplies 25 percent of residential energy consumption and 19 percent of industrial/commercial energy. About 27 percent of electricity supply is primary energy (nuclear, hydropower, and geothermal), the remainder being generated with fossil fuels. In addition to the natural gas contribution, petroleum fuels generate about 19 percent of the state's electricity and coal about 11 percent.[60]

Specific plans for the curtailment of electric service due to energy and capacity shortages have been mandated by California's Public Utilities Commission, through a series of joint hearings held by the CEC and the PUC. An energy shortage, in this context, can be distinguished from a capacity shortage as follows: A capacity shortage occurs if a utility cannot meet customer demands (not enough generation); an energy shortage

Figure 1.6

CEC CALIFORNIA ENERGY EMERGENCY RESPONSE



occurs as a result of a drought or fuel supply shortfall. A capacity shortage can occur if there is an energy shortage, or if there has been disruption to the generation, transmission or distribution of the electricity. Electricity distribution, unlike petroleum distribution, is bound by strict, complex, synchronous, thermodynamic and physical laws. If a certain frequency is not maintained and carefully monitored, the entire "grid" can go "down." The particular frequencies are measured in billionths of a second, and the on-going orchestration of this phenomenon is a major engineering feat. The distinctions between electricity, natural gas and petroleum as energy resources are important because emergency plans for contingent action must incorporate their various characteristics and respect the differences. In this regard, there is no such "one size fits all" energy emergency plan.

Respecting the absolute necessity for flexibility in developing an emergency response, the CEC's plan suggests that, "For an energy emergency plan to have practical utility during an actual crisis it must be developed with the presumption that no two energy shortages are the same. The complex nature of energy supply systems and the many variables that can potentially interact to interrupt their operation strongly argue for an emergency response that is capable of managing <u>any</u> shortage situation. To obtain this flexibility it is important to establish a process for determining the severity of an energy shortage and then selecting the most appropriate emergency action."[61]

To this end, the Commission's plan offers three components which can be modified to to form a specific response to a specific emergency condition:

1) a crisis management structure that relies on expertise inside and outside of state governments;

2) a process for gathering accurate and timely information that ensures rational government action; and

3) a detailed understanding of the emergency programs available for managing the crisis.[62]

These three components generally characterize any emergency management scheme, assuming that adequate communications, direction and control can be found in component number 1. It would seem, then, that any conceptualization of an Energy Emergency District would benefit from incorporating these same components. In this regard, the EED concept might be seen as a framework for emergency resource planning, one that can incorporate the many types of resources, and one which attempts to respect the technological as well as political characteristics of the resources in question.

1.4.3 California Public Utilities Commission

The California Public Utilities Commission (CPUC) is charged with the responsibility for regulating California's investor-owned (private) gas and electric utility companies.

In 1973 there was a sharp reduction in the availability of fossil fuel for electric generation in California resulting from the Arab oil embargo and the subsequent curtailments in imported fuel supplies. At the same time prices for fuel oil rose sharply. Following this was a drought year resulting in a reduction in the availability of electricity from hydroelectric generation facilities. Concern was expressed that California faced an imminent "energy emergency." To meet the potential energy shortages, the PUC ordered electric utilities to put into operation voluntary plans for conservation and curtailment of electric energy.

The fuel crisis of 1973-74 was among the events which led to legislation requiring the PUC to establish priorities for electric service.[63] These priorities are to be used by regulated utilities for allocation of electricity in the event of supply shortages (energy shortages) or in the event of major failures of electric generation or transmission facilities or extraordinary usage because of extreme weather or similar condition (capacity shortages).

Through a series of Decisions,[64] the PUC established the required priorities for electric service, and ordered the utilities to file and

update annually action plans which incorporate the approved priority system and curtailment methods. Although each utility is allowed to develop and implement their plans consistent with their respective systems, a general thesis emerged which serves as the basis for all of the plans. To summarize:

> The capacity shortage plan provides for curtailments (in electric service) in four stages:
>
> Stage I - Voluntary Curtailment; Stage II - Mandatory Curtailment; Stage III - Rotating Outages; Stage IV - Automatic Under Frequency Load Shedding.
>
> Stage I is triggered when spinning reserve is expected to decline below 5% of the anticipated daily peak demand and reduction in customer load is necessary to maintain a 5% spinning reserve.
>
> Stage II is initiated whenever (1) Customers' actions in a Stage I alert do not achieve the necessary load reduction, or (2) spinning reserve falls below 3%, or (3) the capacity shortage has deteriorated to such an extent that mandatory curtailment is necessary to prevent rotating outages (Stage III).
>
> Stage III consists of rotating outages, and is a last resort to be invoked when spinning reserve falls below 1-1/2%.
>
> Stage IV - Automatic under frequency load shedding is automatically implemented when a sudden large load or capacity shortage occurs, in order to maintain system integrity. Notification to customers is not possible.[65]

A similar action plan is proposed for an energy shortage except that the triggers for each stage are different.

Under the capacity and energy shortage plans, the CPUC-established priority system is to be used. High priority customers are those. with

(1) essential end uses (those directly necessary for health, safety, and security); (2) business-use priority (end uses directly necessary for protection of the means of production or the product); or (3) end uses directly necessary for production, processing, storage, or transportation of food and other goods and services. Essential customers (under ordinary circumstances) are exempt from rotating outages.[66]

Based on the efforts of California's energy regulators (the CEC and the PUC), it can be stated that California is "prepared" for an "energy emergency" to the degree that events leading up to a fuel embargo or shortage can be anticipated, and preparation made for the cumulative effects. But what of the catastrophic event, the unforseeable, the technological glitch? The plans in place now assume a relatively long-range time frame from problem (e.g., oil embargo) to impact of the problem (e.g., implementation of the CEC's or the PUC's various Stage Alerts and subsequent actions for the private sector to follow).

In the case of the expected catastrophic earthquake, the effects will be sudden, wide-spread, and devastating. The time frame from problem to impact is likely to be minutes or even seconds, hardly time to effect any sort of Stage Alert. In this case, recovery from the event will be energy-intensive. To date a great deal of work has been done to develop locally-based (and state-guided) emergency preparedness plans. However, plans which define a systematic restoration of service based on specific local priorities or critical users' needs, do not exist.

Except for federal requirements for gas utilities (the Department of Transportation's rulings on interstate pipeline safety, and the Nuclear Regulatory Commission's regulations for nuclear generation facilities), emergency plans have been prepared by the utilities as a matter of prudent policy, not in response to a governmental mandate. Later in this report, a description of the private sector's role in energy emergency preparedness will be given.

1.4.4 California Military Department

The California Military Department (the National Guard) has no regulatory jurisdiction over energy producers, but in the event a State of Emergency is declared by the Governor, the Guard can play a primary role. In particular, the Guard provides personnel and resources for response and recovery efforts when directed by the Governor to do so. Among the resources are a number of generator sets which can be trucked or air-lifted into a disaster area. In addition, the California Guard has been active in the State's earthquake contingency planning efforts.

1.5 Energy and Emergency Preparedness: The Local Government's Role

The California Emergency Services Act provides the basis for the emergency preparedness programs of counties and cities. Ordinances and resolutions, when enacted or adopted by the governing body of each county and city, establish organizations responsible for emergency preparedness and operations. While the specific structure and internal relationships in a county or city emergency organization are determined locally, each organization is expected to be compatible with the state emergency organization (i.e., the Governor's Office of Emergency Services) and provide, as a minimum, executive and staff sections and emergency services charged with the responsibility to prepare for and perform those emergency operations outlined by the state's general Emergency Plan.

In California, many of the major cities and all 58 of the counties have established mutual assistance agreements for law enforcement and fire and rescue services. The mutual aid emergency organization and the procedures that have been developed over time can serve as a comparative model when considering the concept of an Energy Emergency District. When disaster strikes, no matter how intense its impact, or extensive its damage, the effects must be dealt with at the local level. When a community's various resources for dealing with emergencies are exhausted, it may, through mutual assistance pacts with its neighbors, call on them for reinforcements. Underlying the concept of mutual assistance is a philosophy which assumes local self-reliance or sufficiency first, and aid from "outside" only as needed.

The concept of <u>sufficiency</u> assumes the measurement of need against available resources, which in turn assumes an <u>assessment</u> of locally available resources. For example, the procedures developed for fire service mutual aid resources in California require that those resources be inventoried and catalogued. That information is then centralized at the Fire and Rescue Division of the Governor's Office of Emergency Services. The "Fire Services Mutual Aid Resources Inventory,"[67] assesses equipment ranging from pump and water tank engines, to bulldozers; from boats and fire-fighting chemicals, to helicopters and winch booms (for heavy rescue operations); and from <u>energy</u> resources (diesel, gasoline and kerosene), to power generators and the vehicles necessary to transport them.[68]

This information is compiled and updated annually. All fire and rescue operations that are party to a mutual aid pact, with the exception of the California Department of Forestry, the U.S. Forest Service, the Bureau of Land Management, and the California Office of Emergency Services must submit data. The data helps state and regional mutual aid coordinators dispatch more efficiently fire-fighting resources when and where they are needed. Currently, the OES Fire and Rescue Division is computerizing this resource inventory function.

Throughout the state, the degree of local preparedness varies from jurisdiction to jurisdiction. Some, like the City of Modesto, California, have begun city-sponsored programs to develop local energy resources, not only to reduce the costs of energy services to the city, but to enhance the city's level of self-sufficiency and emergency preparedness. As indicated by Modesto's mayor, "Should there be another fuel crisis or should petroleum be rationed, the City would still function since approximately 200 of its smaller vehicles could be operated entirely with methane. In the case of a major disaster in which the City would lose its power supply, the Wastewater Treatment Plant could be temporarily kept in operation with a standby diesel generator. . . . This would then free gasoline to use in the City's heavier equipment, which is not converted to methane."[69] Since October 1983 Modesto has relied on purified methane from its sewage treatment plant to fuel most of its municipal vehicle fleet. With some retrofitting, the methane could be used to generate sufficient electricity to keep the entire plant functioning, should the standby generator fail or diesel fuel not be available.

Other communities, like those in San Diego County have developed close and official working relations with one another in their efforts to enhance emergency preparedness. All sixteen incorporated cities as well as the unincorporated areas of the County are participating members of the Unified San Diego County Emergency Services Organization. The organization was established in 1962 through a Joint Powers Agreement (the last amendment was in 1979). The policy making body of the organization is called the Unified Disaster Council. The chairman of the County Board of Supervisors is the Chairman of the Council. The Council meets at least quarterly.

The Council's uniqueness stems from their collaborative approach to the problems of emergency preparedness and response. That is, that the goals of the organization are to assist one another to develop emergency plans, train public employees, to provide a number of critical services countywide (e.g., coroner, health, medical, public information, radiological safety, etc.), to develop and keep current an inventory of equipment and supplies available in the county for use in an emergency, and to provide assistance to one another for obtaining state or federal funds for emergency purposes. These goals go well beyond the usual interpretation of mutual assistance.

The County's Office of Disaster Preparedness functions as staff to the Unified Organization. The ODP has developed a Lifelines Task Force, which includes the region's major lifeline providers (COMNAVBASE, U.S. Navy; savings and loan and banks; major oil production, refining and distribution companies; water, gas and electricity companies; and communication).[70]

The Lifelines Task Force is distinguished by the degree of their involvement in emergency preparedness activities, the manner in which their efforts are coordinated and communicated throughout the County's emergency services network, and by their tacit understanding of the vital role lifeline organizations play in an emergency.

Like the rest of the Unified Organization, recognition of the tenets of mutual assistance remains paramount: That the government is expected to be the first responder, but that government can't do it all; that business and industry, as well as the general public, need to prepare themselves for self sufficiency; and that there is a great need for government and industry cooperation in improving preparedness.[71]

1.5.1 Special Purpose Districts

Within the California Emergency Services Act are provisions for the establishment of special purpose districts. These "political subdivisions" of the state, may (and do) function as integral parts of the state and local emergency organizations.

What are special purpose districts? The Controller of the State of California defines a district as a "legally constituted governmental entity, which is neither a city nor county, established for the purpose of carrying on specific activities within. . . defined boundaries."[72]

Districts also exercise many of the same powers as other units of local government, including the right to have perpetual succession; the power to sue and be sued; to acquire real or personal property; to exercise the right of eminent domain; to adopt a seal; and to tax. Such powers provide a general description of their legal structure.

Districts are created by the state and are designed to tie interests of general state concern (such as emergency preparedness) with the interests of local communities (also emergency preparedness). In California, there are over 186 enabling statutes for the creation of special purpose districts.

Districts can be defined in terms of the functions they perform: for example, fire, water, sewage treatment, energy, etc. Districts are also defined by whether they are independent or dependent. Thus the authority of a district is characterized by some of the following considerations:

Independent District

a) usually established by the state;
b) governed by elected boards or have provisions for the election of a board of directors;
c) can tax, determine the price of services they provide, sell bonds for capital improvements;
d) can establish their own administrative structure;

e) examples include: fire protection, water production and distribution, sanitation, recreation, flood control, air pollution control, municipal utility, and mosquito abatement.

Dependent District

a) usually established by a city or county;
b) cannot tax;
c) cannot set service levels independently of its parent body;
d) examples include: county services districts, maintenance districts, and highway lighting districts.

An additional defining characteristic of a special purpose district is its fiscal structure. It is important to determine whether or not goods or services produced by a district are enterprise or non-enterprise functions. If the district performs enterprise functions, then there is usually an allowance for direct charge to the citizen (consumer) for the service used, as in water, airport, utility and cemetery districts. Non-enterprise functions are usually services and goods difficult to price (like public safety or security, recreation, etc.) and are usually financed through general property taxes, as in fire districts, and park and recreation districts.[73]

Given the aforementioned characteristics, a number of parameters or defining characteristics emerge for structuring models of the EED concept. They are:

- defined boundaries
- defined functions
- defined legal structure
- defined authority
- defined fiscal structure

As will be explored more thoroughly in Part II, these parameters of special purpose districts, were variously shaped into different models of the EED concept with functional considerations having the most priority.

Local governments, be they cities, counties, or special districts, all play important roles in emergency preparedness. The problems and responsibilities most often begin at the local level, thus an adequate response must assume at least a modicum of emergency resource preparedness. The needs for energy resources during a crisis situation are varied and complex. The special role of the private sector, the primary providers of energy, is not well known or understood. The next section provides an overview of their contributions, from the national to the local level.

1.6 Energy and Emergency Preparedness: The Private Sector's Role

American energy providers (oil companies, electric and gas utilities) recognize the critical role their companies play in "normal" times. Energy is probably one of the most ubiquitous commodities in the United States today, yet the average consumer takes its availability for granted. The lack of energy to run modern-day society constitutes an emergency in and of itself. Under crisis conditions (storms, earthquakes, mobilization for war, etc.) inadequate supplies of energy resources can be life-threatening.

Historically the means of developing, supplying and storing all types of energy have been, in the main, the purview of the private sector. For less-than-national emergencies, almost all private utilities and energy providers have developed emergency plans and procedures.

The example set by Houston Lighting & Power Company to prepare for, survive, and recover from Hurricane Alicia in August, 1983 are noteworthy. In that case:

- 750,000 customers lost electric service--more than the total number of customers HL&P had when Hurricane Carla struck in 1961.

- Service was restored to all customers in 16 days. Over 80 percent of affected customers were restored within four days.

- Hurricane Alicia's cost to HL&P totalled $27 million through October 31.

- HL&P fielded the largest workforce of skilled personnel ever assembled to undertake storm repairs. Through October 31, storm damage had required over 400,000 hours of overtime to repair.

- All power to Galveston Island was lost (this is a major oil refining area).

- 600 miles of line--the distance between Houston and Birmingham--were blown to the ground.

- Approximately 8,000 miles of electric service lines were out of service.

- More than 40,000 service drops, attachments between distribution poles and customer buildings, were torn loose.

- 569 of HL&P's 1,100 distribution circuits were out of service.

- 50 of the company's 160 transmission circuits were knocked out.

- 70 HL&P and customer-owned substations were out of service.

- 6,213 line fuses were blown.

- 2,710 transformers were destroyed.[74]

Given this demonstration of emergency preparedness and recovery capabilities (restoring 750,000 customers in 16 days), it is understandable that energy companies have resisted federal direction and control for less-than-national emergencies (see Section 1.3.2). However, conventional and nuclear war preparedness are readily acknowledged by all as the joint

responsibility of the federal government and the energy producers. Since World War II, this relationship has evolved to its current status. The following sections briefly trace the role of the private sector in the history of the Emergency Electric Power Administration, and the development of the industry-sponsored national and regional reliability councils. The contributions of the Utilities Joint Agreement to state-level emergency preparedness will be explored, as will the relationship between San Diego Gas & Electric Company and local government emergency preparedness.

1.6.1 The Private Sector's Role: National Level

The Defense Electric Power Administration (DEPA) was established on December 4, 1950 within the Department of the Interior (DOI) as the claimant agency for the electric power industry in the defense mobilization program. Its three main functions were (1) allocation of controlled materials for defense electric power construction projects; (2) surveying the nation's electric power needs to meet defense loads and emergencies; and (3) passing upon applications by electric utilities for certificates of rapid tax amortization before submission to the Defense Production Administration for action. DEPA was abolished June 30, 1953 when its services were no longer needed.

In the autumn of 1955, DOI was delegated specific responsibilities in the electric power field by both the Office of Defense Mobilization and the Federal Civil Defense Administration, with the approval of President Eisenhower. These responsibilities were described by the Assistant Secretary, Water and Power Development: "In the event of an emergency of near or actual catastrophic proportions, Interior would be bound to see that any target or supporting areas would receive power. This power would be from whatever source that might be available, so that civilian survival, military offense, essential defense and defense-supporting activities could be continued or resumed."[75]

A series of meetings with representatives of major electric power producers were held and plans for accomplishing the assigned tasks discussed. In each region of the country the need for a representative through whom national planning could be coordinated was agreed upon.

The reactivation of DEPA followed from these meetings to provide a mechanism within DOI to implement the electric power industry's reponse to a national emergency. In 1962, Department of Interior officials characterized DEPA as "established on a standby basis, ready to swing into action in the event of a civil defense emergency. It leans heavily on the advice of experts drawn from the power industry. They serve without compensation as consultants and area directors. Planning, constantly in progress, is aimed at restoring vital electrical service at the earliest possible moment following attack."[76]

In 1966, Interior Secretary Udall approved the concept of an expanded DEPA with an improved field structure; a capability to deal with the potential implementation of material controls as in the Korean War; and an Industry Advisory Committee. In 1966, the Edison Electric Institute formed a Task Force on National Defense to discuss plans for an Industry Advisory Committee (IAC) as requested by the Department of Interior. The first IAC was formed in February, 1967, and on February 19, 1969 it adopted a Statement of Policy on National Emergency Preparedness in the Electric Utility Industry.

The evolving DEPA program was conceptualized and supported by the electric power industry. The chief executive officers of the largest and most influential power companies lent their support and actively participated in its development and continuity. The IAC's purpose was to advise the Secretary of the Interior and the Administrator of the Defense Electric Power Administration on matters concerning the electric power industry in emergency planning for national disasters and the national defense on a continuing basis.

As a stand-by, defense-related emergency planning agency, DEPA was characterized by its high-powered Industry Advisory Council and its far-flung field organization. The field structure spanned the continental United States and included Alaska, Hawaii, Puerto Rico, and the Virgin Islands. It was divided into nine regions, paralleling the North American Electric Reliability Council (NERC) areas (less Canada). Each region had a director and deputy director and, in some cases, several sub-regions,

each with its own director. In addition, there were regional power liaison representatives. Altogether, including alternates, there were about 500 people manning the field organization.

In 1977, DEPA was transferred to the newly-created Department of Energy, along with the power marketing agencies and some other energy related groups. According to the Industry Advisory Committee, DEPA had lost organizational stature. A statement provided to DOI upon request emphasized this concern: "In view of the recent reorganization affecting the Defense Electric Power Administration pre-emergency organization, it is the opinion of the members of the IAC that without a formal DEPA organization to represent the Secretary's Office, it would no doubt be difficult to maintain the proper prestige of this committee. Therefore, it is recommended that this Committee be discontinued."[77]

Soon afterward, DEPA's name was changed to EEPA -- Emergency Electric Power Administration. This made way for a number of proposals to broaden the scope of EEPA's responsibilities to include short-term, less-than-national emergencies such as coal strikes, major storms, oil embargoes, etc. This expanded mission for EEPA has been strongly opposed by the EEPA field organization at every meeting since first proposed in December, 1977. In addition to an expanded mission, DOE has suggested that the EEPA field organization be broadened to include user groups and state and local representatives. The EEPA field organization has likewise resisted this proposal as impractical and in fact almost certain to further complicate the electric utility industry's role in carrying out its statutory responsibilities for supplying power as needed.

Since March, 1980, there has been no EEPA Administrator at the DOE, and since March, 1981, EEPA has been assigned to the Office of Emergency Operations (see Section 1.3.2), one of the lowest organizational offices in the DOE hierarchy. It is clear from the following statement, that industry officials agree with the General Accounting Office findings of May, 1981 (that federal leadership for electrical emergency planning and preparation is unorganized and inadequate):[78]

> Since emergency planning became the responsibility of DOE in 1977, it has fallen steadily into deeper disarray. The DEPA organization, once buttressed by a powerful Industry Advisory Committee with direct access to the Secretary of the Interior and a strong and active field organization, is now buried deep within DOE. It has had no full-time administrator for over four years and not even a part-time one for three years. With no Industry Advisory Committee it has no voice at higher departmental levels. Further, the potent support of top industry leaders is no longer clearly evident. Continued efforts by the DOE Emergency Planning Group to expand EEPA's role to include less-than-national emergencies and broaden EEPA's membership to include user groups, state and local representation against consistent, unanimous, almost violent industry opposition has had a dispiriting effect on the EEPA field organization and appears to have seriously eroded its dedication and enthusiasm developed throughout a decade of DOI sponsorship. [79]

Since EEPA is currently a relatively inactive organization,[80] the North American Electric Reliability Council appears to be the only industry-sponsored mechanism in place for possible national emergency preparedness planning activities. Indeed, the Department of Energy has proposed using the NERC headquarters and nine regional control areas to supercede the current EEPA field organization, but this too, has been met with resistence by the industry. (They argue that both DEPA and NERC were industry creations and that separate and distinct roles were envisioned for each.)

The North American Reliability Council was formed by the electric utility industry in 1968 to promote the reliability and adequacy of bulk power supply in the electric utility systems of North America.[81] NERC consists of nine regional reliability councils encompassing virtually all of the power systems in the United States and Canada. The national council, with headquarters in New Jersey, is organized into two major committees, the Engineering Committee and the Operations Committee. Within these committees are a number of subcommittees and task forces, which deal with the myriad concerns of the regional member utilities, and maintain rigid performance standards for the industry.

During 1983, NERC established a task force on Electromagnetic Pulse, to review the literature on the potential effects on electric systems of an upper atmosphere nuclear explosion. The EMP Task Force maintains contact with Department of Energy officials and with researchers at the Electric Power Research Institute (EPRI). In a report released by EPRI in July,

1983 called EMP Analysis,[82] the role of NERC, EPRI and the Edison Electric Institute in emergency preparedness is discussed. (EEI is the electric utility industry's trade association, headquartered in Washington, D.C.). Pointing to areas for future research and development to better prepare the United States power systems for a nuclear attack, the report states:

> An early warning system which could automatically alert (utility) control centers of an imminent nuclear attack would appear to be of crucial importance to the survivability of the national electric power network. Scenario studies indicate warning times varying from minutes to several days are possible. System operational procedures to mitigate against EMP effects over these varying time periods need to be established. With a one-to-two minute warning, control center computers could either segment power systems in accordance with pre-arranged plans designed for maximum protection of key equipments or strengthen ties and take other to be determined steps to ride through an attack. With no time for human decision-making at the control centers, such automatic action appears to be the strategy of choice for protecting the power system. For the larger time periods operator initiated procedures present a viable alternative. Inasmuch as such procedures have obvious natural defense benefits, we believe that the bulk of the funding for these programs would come from such Federal agencies as DOE, DNA, and FEMA. However, pertinent R&D programs which have broader additional benefits for the electric power industry may be more appropriately sponsored by EPRI. Determining exactly which programs should be sponsored and by whom can only be decided by holding discussions with DOE, DNA, and FEMA with the object of developing mutually supportive and coordinated R&D programs.[83] [Emphasis added]

The report underscores the industry's concern that the Emergency Electric Power Administration be revitalized, that the once-active Industry Advisory Committee (of the Defense Electric Power Administration) be re-established, and that the use of NERC "for whatever needs DOE may have" be restricted to natural disasters or other less-than national emergencies. The irony is that the regional composition of NERC's overall structure is technologically bound (as well as geographically), and that in order for an early alert system to be communicated, the most effective way would be through the already-established NERC regional and sub-regional channels.

1.6.2 The Private Sector's Role: Regional Level

Each of the nine regional reliability councils of the NERC organization is composed of a number of participating member utility systems. Members range from investor-owned (private) companies, to federal and state-run power companies, to municipal utilities and community-level cooperatives. Each Regional Council is organized in a similar manner as NERC, that is, each has a Board of Directors, special, functional committees, and each region concerns itself with the provision of adequate and reliable power. Because bulk power purchasing and trading has become so prevalent, new factors such as transmission line capacity, have become critical in maintaining energy reliability.

Each region has its own power production "mix", relying on combinations of nuclear, coal, gas, oil, hydro, and alternative generation to meet their customers' demands. Figure 1.7 is a map of the United States depicting the geographical distribution of the nine regions across the country and through Canada.

The boundaries of each of the nine regions represent the combined service or control areas for a given region's member utilities. Each region can therefore be seen as a unit cf analysis for that group of energy producers, the political jurisdictions that exist within (or overlap) a region, and the particular geographic elements (lakes, rivers, mountains, etc.) that pertain. It is important to note that the technological boundaries of member systems (i.e., the service control areas) do not always coincide that with an area's political boundaries, and that there are many instances in which several utilities, both private and public, serve a single city or other local jurisdiction. The following outlines some of the key characteristics of each of the nine NERC regions. This information is provided to establish a background for later exploration of the EED concept.

Figure 1.7

NORTH AMERICAN RELIABILITY COUNCIL

ECAR
East Central Area Reliability Coordination Agreement

ERCOT
Electric Reliability Council of Texas

MAAC
Mid-Atlantic Area Council

MAIN
Mid-America Interpool Network

MAPP
Mid-continent Area Power Pool

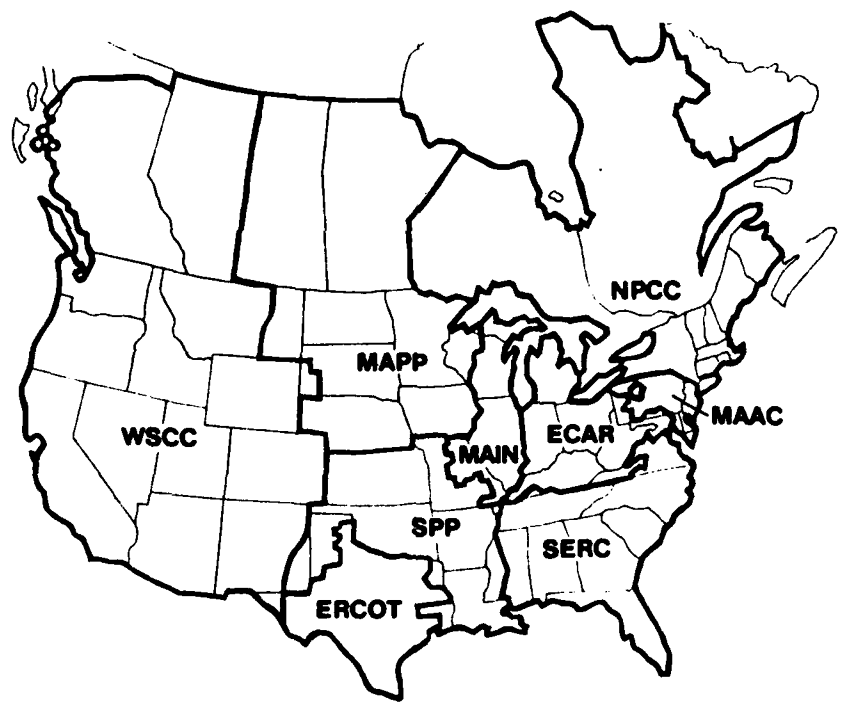
NPCC
Northeast Power Coordinating Council

SERC
Southeastern Electric Reliability Council

SPP
Southwest Power Pool

WSCC
Western Systems Coordinating Council

AFFILIATE
ASCC
Alaska Systems Coordinating Council



East Central Area Reliability Coordination Agreement (ECAR):

The ECAR region of NERC (see Figure 1.8) encompasses the states of Michigan, Ohio, Indiana, West Virginia, Kentucky, and portions of Virginia and Pennsylvania and Maryland. The region is defined by 194,000 square miles of area served, with service to a total of 36 million people. Table 1.2 is a listing of ECAR's twenty-seven bulk power members. Approximately eighty-four percent of ECAR's generating capacity is coal-fired and, for the foreseeable future, coal will continue to be the most important fuel to the region. Oil-fired generation and combustion turbines constitute about seven percent, hydro units and pumped-storage nearly four percent, and nuclear units about five percent.[84]

Figure 1.8

THE ECAR REGION

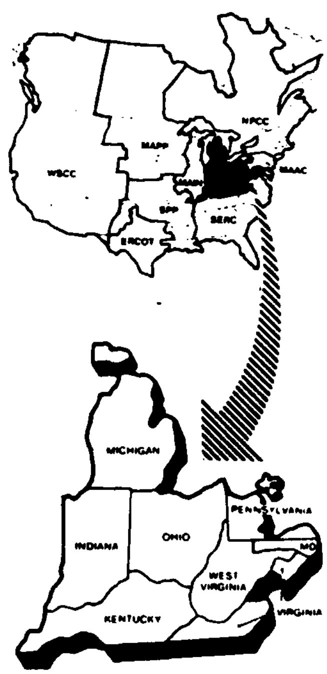


Table 1.2

ECAR MEMBER SYSTEMS

Appalachian Power Company
Cincinnati Gas & Electric Company
Cleveland Electric Illuminating Company
Columbus & Southern Ohio Electric Company
Consumers Power Company
The Dayton Power and Light Company
Detroit Edison Company
Duquesne Light Company
East Kentucky Power Cooperative
Hoosier Energy Rural Electric Cooperative, Inc.
Indiana & Michigan Electric Company
Indiana-Kentucky Electric Corporation
Indianapolis Power & Light Company
Kentucky Power Company
Kentucky Utilities Company
Louisville Gas and Electric Company
Monongahela Power Company
Northern Indiana Public Service Company
Ohio Edison Company
Ohio Power Company
Ohio Valley Electric Corporation
Pennsylvania Power Company
Potomac Edison Company
Public Service Company of Indiana, Inc.
Southern Indiana Gas and Electric Company
The Toledo Edison Company
West Penn Power Company

Population Served: 36 million
Area Served: 194,000 square miles
ECAR Headquarters: Canton, Ohio

Extensive inter-company and area communication facilities are used by ECAR and its members to coordinate normal and emergency system operations among and between the power control centers within ECAR and adjoining regions.

Some eighty-five direct voice communication channels between system power control centers use privately-owned or leased telephone lines, microwaves, or power-line carriers. Alternate circuit paths insure that these facilities are adequate and reliable.

A communication/computer network interconnects the area's power control centers, including the ECAR office. It is used to exchange operating information among the systems and to broadcast abnormal condition reports

such as a sudden loss of generation, the tripping of an important transmission line, or the cause of an unusual transmission system loading pattern. This network connects computer-controlled video terminals and high speed printers at each power control center and the ECAR office.

A leased-line private telephone system, independent of inter-company communication facilities, enables five area coordinators and the ECAR office to be in contact on an individual or collective basis during a fast-developing emergency situation. The five area coordinators provide an overview of regional conditions, and are responsible for staying abreast of day-to-day system conditions that affect reliability and/or adequacy of power supply within their respective areas. The coordinators and their alternates are managerial personnel of the system operating departments of their respective companies and have authority to make immediate decisions on matters affecting the operation of the bulk power system. Through use of the communication channels described above, each of the five area coordinators obtains regional information for communicating to the other operating companies in their area of responsibility, as well as to systems adjacent to ECAR which have interfaces with their areas.

This elaborate, redundant communication system between member systems in the ECAR region, generally characterizes the emergency communication networks that have been established in the other eight regions. In many cases, these systems are as sophisticated as those in place for the United States' strategic and deterrent forces.

Electric Reliability Council of Texas (ERCOT):

Membership in ERCOT is composed of eighty-three electric systems (see Table 1.3), who operate eighty-five percent of the total electric generation in Texas. These member systems serve approximately 195,000 square miles or seventy-three percent of the area of the state (see Figure 1.9).

Table 1.3

ERCOT MEMBER SYSTEMS

Cooperatives

B-K Electric Cooperative Inc.
Bartlett Electric Cooperative
Belfalls Electric Cooperative
Bluebonnet Electric Cooperative
Brazos Electric Power
Cap Rock Electric Cooperative
Comanche County Electric
Concho Valley Electric
Deep East Texas Electric
Denton County Electric
DeWitt County Electric
Dickens County Electric
Erath County Electric
Fannin County Electric
Farmers Electric Cooperative
Fayette Electric Cooperative
Grayson-Collin Electric
Guadalupe Valley Electric
Hamilton County Electric
Hill County Electric
Hunt-Collin Electric
J-A-C Electric
Jackson Electric
Jasper-Newton Electric
Johnson County Electric
Kaufman County Electric
Kimble Electric
Lamar County Electric
Limestone County Electric
Lone Wolf Electric
Magic Valley Electric
McCulloch Electric
McLennan County Electric
Medina Electric Cooperative
Mid-South Electric
Midwest Electric
Navarro County Electric
New Era Electric
Pedernales Electric
Robertson Electric
Sam Houston Electric
San Bernard Electric
South Texas Electric
southwest Texas Electric
Stamford Electric
Taylor Electric
Tri-County Electric
Victoria County
Wharton County Electric
Wise Electric Cooperative

Municipalities

City of Austin
City of Boerne
City of Brady
City of Brenham
City of Brownsville
City of Bryan
City of Coleman
City of Cuero
Denton Municipal Utilities
Garland Utilities
Giddings Lighting & Power
Goldthwaite Utilities
City of Gonzales
Greenville Utilities
City of Hemphill
Hondo Electric System
La Grange Utilites
City of Lockhart
City of Luling
New Braunfels Utilities
Robstown Utilities
San Antonio
Schulenburg Utilities
Seguin Electric Utilites

Investor-Owned Systems

Central Power & Light Company
Dallas Power & Light Company
Houston Lighting and Power Company
Southwestern Electric Service Co.
Texas Electric Service Company
Texas-New Mexico Power Company
Texas Power & Light Company
West Texas Utilities Company

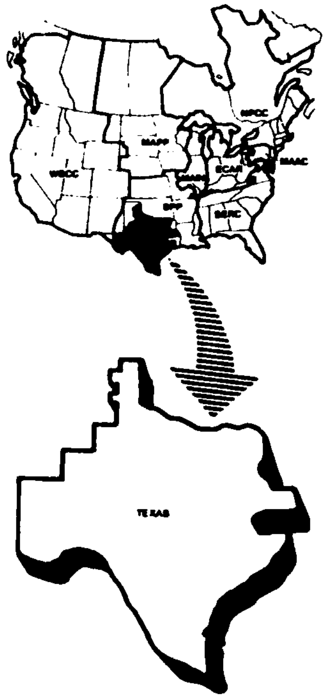
State Agency

Lower Colorado River Authority

Population Served: 11 million
Area Served: 195,000 square miles
ERCOT Headquarters: Houston, Texas

Figure 1.9

THE ERCOT REGION



The Council's activities include maintenance of communications, exchange of materials, supplies, equipment and manpower for restoration of service in event of natural disasters, riot or national emergencies, and appropriate reporting of information to regulatory agencies.

As of 1983, ERCOT systems were operating 11,901 megawatts (MW) of coal and lignite-fired capacity, and an additional 32,847 MW composed of natural gas and relatively small amounts of hydro and oil-fired generating capacity.

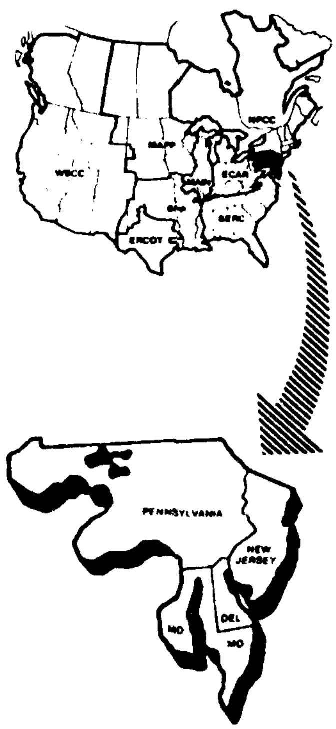
All generating capacity presently under construction or planned, with the exception of a small amount of solid-waste-fueled capacity (alternative generation), is either coal-fired (including lignite) or nuclear.[85]

Mid Atlantic Area Council (MAAC):

The MAAC region consists of eleven member systems (see Table 1.4) serving over 21 million people, and includes all of Delaware and the District of Columbia, major portions of Pennsylvania, New Jersey, and Maryland, and a small portion of Virginia (see Figure 1.10). In addition to the eleven member systems, the municipals, electric cooperatives, and small, investor-owned electric systems operating in the region may participate in MAAC activities through Associate representation. Each Associate is a representative of the interest groups of these systems in their respective states. Presently, there are five Associates in MAAC.

Figure 1.10

THE MAAC REGION



The MAAC region's "energy mix" is designed to decrease its use of oil-fired generation. For 1983, energy generated from oil amounted to about eleven percent, nuclear provided over sixteen percent, coal provided over fifty-two percent, and the remainder was imported from various sources outside the region.[86]

Table 1.4

MAAC MEMBER SYSTEMS

Signatories

Atlantic City Electric Company
Baltimore Gas & Electric Company
Delmarva Power & Light Company
Jersey Central Power & Light Company*
Metropolitan Edison Company*
Pennsylvania Electric Company*
Pennsylvania Power & Light Company
Philadelphia Electric Company
Potomac Electric Power Company
Public Service Electric & Gas Company
UGI Corporation

Associates

Allegheny Electric Cooperative, Inc.
City of Dover, DE
City of Vineland, NJ
Easton Utilities Commission
Southern Maryland Electric Cooperative, Inc.

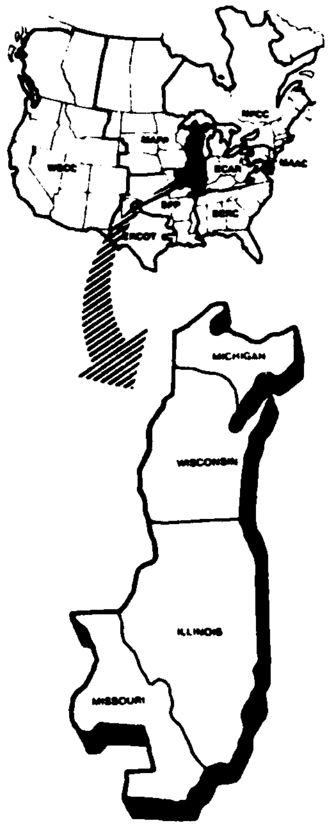
Population Served: 21.4 million
Area Served: 48,700 square miles
MAAC Headquarters: Norristown, Pennsylvania

*Subsidiaries of the General Public Utilities Corporation

Mid-America Interpool Network (MAIN):

The Mid-America Interpool Network includes investor-owned, municipal, and cooperative systems that serve the 18 million people that live in approximately 170,000 square miles of portions of Illinois, Michigan, Missouri, and Wisconsin (see Figure 1.11).

Figure 1.11
THE MAIN REGION



MAIN's 6,5000,000 customers represent a cross section of Mid-America: commerce, industry, agriculture, education, research facilities, recreation as well as residential in cities, suburbs, small towns and rural areas. MAIN has both Regular and Associate members. Associate membership is open to smaller systems that do not have a significant effect on system reliability. For administrative and study purposes, the MAIN members have been subdivided geographically into four groups: Commonwealth Edison, South-Central Illinois, Wisconsin Upper Michigan, and the Union Electric System in Missouri. Table 1.5 provides a list of MAIN member systems, broken out by these four geographic groups.

The MAIN systems rely heavily on nuclear generation for base load operation. At present, member companies in Illinois and Wisconsin have in service ten nuclear units totaling 7,434 MW, which is about fifteen percent of MAIN's generating capability (these ten units generate about twenty-four percent of the total energy output of the MAIN system). By 1993, the nuclear units in MAIN are expected to generate about forty percent of MAIN's output.

Use of oil for electric power generation in the MAIN Region is minimal; oil-fired steam turbine units and combustion turbines generate less than three percent of MAIN's total energy output. The remainder of MAIN's customers' needs are met by interregional transfers with continguous councils.[87]

MAIN and its members maintain a close relationship with the Department of Energy and with state regulatory commissions. MAIN has agreed to support the Emergency Electric Power Executive Reserve (EEPER) program of DOE (see Section 1.3.2). The MAIN Administrative Manager has been named the regional director for EEPER, which may be activated in a presidentially-declared national emergency.

Table 1.5

MAIN MEMBER SYSTEMS

Regular Members

Commonwealth Edison Company

South-Central Illinois Group:
- Central Illinois Light Company
- Central Illinois Public Service Company
- Illinois Power Company
- Southern Illinois Power Cooperative
- Springfield-City, Water, Light & Power

Wisconsin-Upper Michigan Group:
- Madison Gas & Electric Company
- Upper Peninsula Power Company
- Wisconsin Electric Power System
- Wisconsin Power & Light Company
- Wisconsin Public Service Corporation

Union Electric System:
- Union Electric Company
- Missouri Edison Company
- Missouri Power & Light Company
- Missouri Utilities Company

Associate Members
- Soyland Power Cooperative
- Western Illinois Power Cooperative

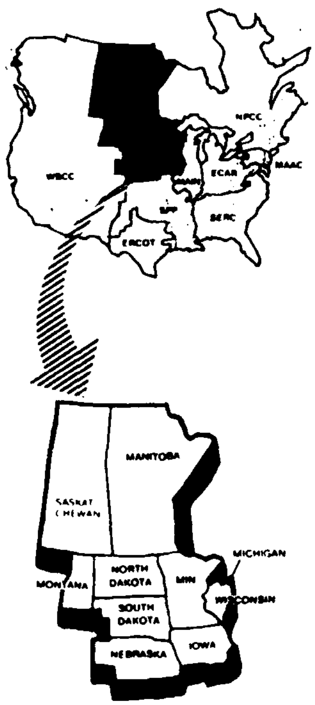
Population Served: 18 million
Area Served: 170,000 square miles
MAIN Headquarters: Lombard, Illinois

Mid-continent Area Power Pool (MAPP):

The eight states (Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, South Dakota, and Wisconsin) and two Canadian provinces (Manitoba and Saskatchewan) of the MAPP Region cover nearly 900,000 square miles in the heartland of North America (see Figure 1.12). Although the Region has traditionally been an economy of agriculture and manufacturing, recent data suggest the Region will generally follow the national trend toward more service industry. However, due to the fact that more than three quarters of the land in the Region is devoted to agriculture, the Region will remain an essential component in agricultural production.

Figure 1.12

THE MAPP REGION



The Region's generating mix provides diversity and flexibility in fuel sources. Coal, comprising sixty-three percent of power capacity provides sixty-five percent of the electric energy. Nuclear plants provide thirteen percent of capacity, but twenty-two percent of energy. Hydro, at eleven percent of capacity, provides twelve percent of total energy production. Oil is used for less than one percent of the total electric production for the Region, although twelve percent of the capacity is oil or gas-fired. During the next ten years, loads are expected to grow at somewhat less than three percent annually, with coal providing the major fuel supply necessary to meet theee increasing needs.[88]

Members in the MAPP Region range from investor-owned, cooperatives, and municipal utilities, to federal and foreign companies. Table 1.6 presents the members of the MAPP Region.

Table 1.6

MAPP MEMBER SYSTEMS

Investor-Owned

Interstate Power Company
Iowa Electric Light and Power Co.
Iowa-Illinois Gas and Electric Co.
Iowa Public Service Company
Iowa Southern Utilities Company
Minnesota Power & Light Company
Montana Dakota Utilities
Northern States Power Company
Northwestern Public Service Co.
Northwestern Wisconsin Electric Co.
Otter Tail Power Company

Rural Electric G & T Cooperatives

Basin Electric Power Cooperative
Central Iowa Power Cooperative
Cooperative Power Association
Corn Belt Power Cooperative
Dairyland Power Cooperative
Minnkota Power Cooperative, Inc.
Northwest Iowa Power Cooperative
United Power Association

Public Power Districts

Heartland Consumers Power District
Nebraska Public Power District
Omaha Public Power District

Municipal Utilities

Ames Municipal Electric System
Cedar Falls Municipal Utilities
Cumberland Municipal Utility
Delano Municipal Utilities
Fremont Department of Utilities
Glencoe Municipal Electric Plant
Grand Island Electric Department

Municipal Utilities (cont'd)

Harlan Municipal Utilities
Hibbing Public Utilities
Lincoln Electric System
Madelia Municipal Light & Power Department
Missouri Basin Municipal Power Agency
Municipal Energy Agency of Nebraska
Muscatine Power & Water
Northern Iowa Municipal Electric Cooperative Association
Owatonna Municipal Public Utilities
Redwood Falls Public Utilities Commission
Rochester Public Utilities
Southern Minnesota Municipal Power Agency

Federal Agency

Western Area Power Administration
Department of Energy

Crown Corporations of Canada

Manitoba Hydro-Electric Board (Coordination Center Participant only)
Saskatchewan Power Corporation

Population Served: 15.6 million
Area Served: 890,000 square miles
MAPP Headquarters: Minneapolis, Minnesota

Northeast Power Coordinating Council (NPCC):

NPCC consists of twenty-two full member systems (see Table 1.7), which supply about ninety-eight percent of all the electric generation in the Northeast portion of North America. The Council Region consists of the

Table 1.7

NPCC MEMBER SYSTEMS

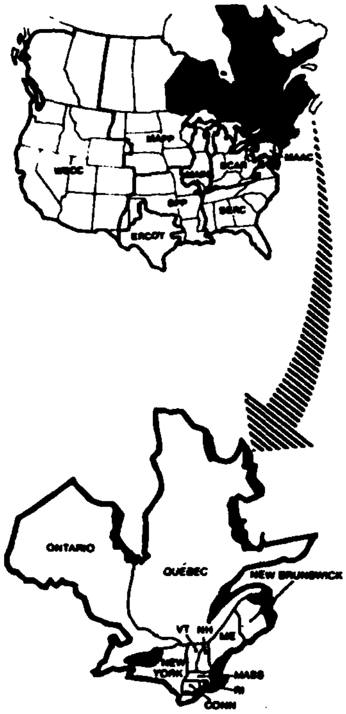
Boston Edison Company
Central Hudson Gas & Electric Corporation
Central Maine Power Company
Central Vermont Public Service Corporation
Commonwealth Energy System
Consolidated Edison Company of New York, Inc.
Eastern Utilities Associates
Green Mountain Power Corporation
Hydro-Quebec
Long Island Lighting Company
Massachusetts Municipal Wholesale Electric Co.
New Brunswick Electric Power Commission
New England Electric System
New York Power Authority
New York State Electric & Gas Corporation
Niagara Mohawk Power Corporation
Northeast Utilities
Ontario Hydro
Orange and Rockland Utilities, Inc.
Public Service Company of New Hampshire
Rochester Gas and Electric Corporation
United Illuminating Company

Population Served: (US = 27.4 million)
(Canada = 15.7 million)
Area Served: (US = 112,527 square miles)
(Canada = 878,598 square miles)
NPCC Headquarters: New York, New York

states of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont, and the Canadian provinces of New Brunswick, Ontario, and Quebec (see Figure 1.13).

Figure 1.13

THE NPCC REGION



Five distinct planning and operating entities exist within the NPCC Region. Member systems in New England are also members of the New England Power Pool (NEPOOL), and systems in New York are members of the New York Power Pool (NYPP). New Brunswick Electric Power Commission, Ontario Hydro, and Hydro-Quebec are single entities serving their respective provinces in Canada.

The U.S. members of NPCC have reduced their use of oil but remain heavily dependent on this fuel. Oil-fired capacity represents over fifty percent of installed capacity in both New England and New York. NPCC systems in total consume more oil than any other NERC Region and approximately fifty percent of all oil used within NERC. Electric needs for the NPCC Region are met by the following fuels: oil provides about thirty-nine percent; gas about six percent; coal about eighteen percent, nuclear about twenty-three percent; and hydro and alternatives provide about fifteen percent.[89]

Southeastern Electric Reliability Council (SERC):

SERC was formed by combining what had been the Florida Power Corporation, the Southern System, the Tennessee Valley Authority System, and the Virginia-Carolina Systems. Membership is open to all electric power utilities interconnected with the Regional electric network and operating a generating capability of twenty-five megawatts or more.

Eight Associate Members represent distribution cooperatives and municipalities, operating either no generation or less than twenty-five megawatts (see Table 1.8). The SERC Region contains the states of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennesee, and Virginia (see Figure 1.14).

Table 1.8

SERC MEMBER SYSTEMS

Alabama Electric Cooperative, Inc.	South Carolina Electric & Gas Company
Alabama Power Company	South Carolina Public Service Authority
Carolina Power & Light Company	South Mississippi Electric Power Association
Crisp County Power Commission	Southeastern Power Administration
Duke Power Company	City of Tallahassee, Florida
Florida Power Corporation	Tampa Electric Company
Florida Power & Light Company	Tapoco, Inc.
Gainesville Regional Utilities	Tennessee Valley Authority
Georgia Power Company	Vero Beach Municipal Power System
Gulf Power Company	Virginia Electric and Power Company
Jacksonville Electric Authority	Yadkin, Inc.
City of Lakeland, Florida	
Mississippi Power Company	
Nantahala Power and Light Company	
Orlando Utilities Commission	
Savannah Electric and Power Company	

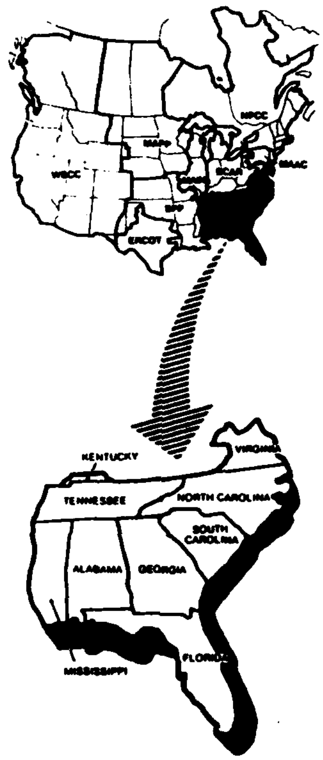
Population Served: 37.7 million

Area Served: 345,636 square miles

SERC Headquarters: Birmingham, Alabama

Coal and nuclear provide the greatest share of SERC's electric generation resource base, with coal contributing about sixty percent and nuclear, twenty-seven percent. The remainder is generated by gas-fired (three percent), and oil-fired (four percent), and hydro and other provides approximately six percent.[90]

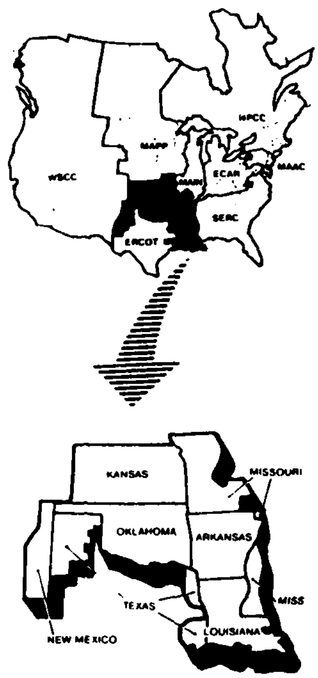
Figure 1.14
THE SERC REGION



Southwest Power Pool (SPP):

The SPP is comprised of all or parts of eight states (Arkansas, Illinois, Kansas, Louisiana, Mississippi, Missouri, Oklahoma, and Texas) serving a population of over twenty-three million (see Figure 1.15). Membership includes eighteen investor-owned utilties, twelve municipalities, six G & T Cooperatives, one federal system, and one state system (see Table 1.9).

Figure 1.15
THE SPP REGION



The Region's resource mix depends heavily on coal (nearly fifty one percent of electricity generated is from coal), and on natural gas (thirty-six percent). Oil-fired generation contributes just over four percent and hydro and other gives three percent. Coal, lignite and nuclear resources will continue to be dominant for the Region.[91]

Table 1.9

SPP MEMBER SYSTEMS

Investor Owned

Arkansas Power & Light Company
Central Kansas Power Company
Central Louisiana Electric Company
Empire District Electric Company
Gulf States Utilities Company
Kansas City Power & Light Company
Louisiana Power & Light Company
Mississippi Power & Light Company
Missouri Public Service Company
New Orleans Public Service Company
Oklahoma Gas and Electric Company
Public Service Company of Oklahoma
St. Joseph Light & Power Company
Southwestern Electric Power Company
Southwestern Public Service Company
Western Power Division, CT&U

G & T Cooperatives

Arkansas Electric Cooperative Corporation
Associated Electric Cooperative
Cajun Electric Power Cooperative
KAMO Electric Cooperative
Sunflower Electric Cooperative
Western Farmers Electric Cooperative

Municipalities

City of Alexandria, Louisiana
Board of Public Utilities, Kansas City, Kansas
Chanute Municipal Utilities
City of Clarksdale, Mississippi
City of Greenwood, Mississippi
Coffeyville Municipal Power & Light
City of Lafayette, Louisiana
City of Ruston, Louisiana
City Power & Light, Independence, Missouri
City Utilities, Springfield, Missouri
City of Sikeston, Missouri

State Agencies

Grand River Dam Authority

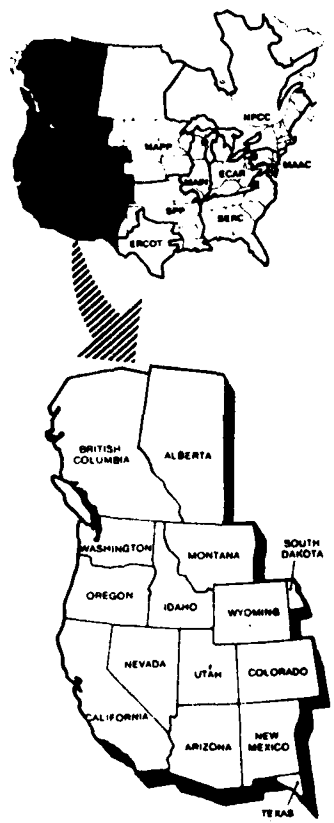
Federal Agencies

Southwestern Power Administration

Western Systems Coordinating Council (WSCC):

The WSCC Region, which is the largest geographically of the nine Regional Reliability Councils, consists of four natural Subregions, comprised of all or parts of thirteen states (Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming). The Subregions are the Northwest Power Pool Area (which includes the Canadian Provinces of British Columbia and Alberta), the Rocky Mountain Power Area, and the California-Southern Nevada Power Area (see Figure 1.16).

Figure 1.16
THE WSCC REGION



The WSCC Region encompasses approximately 1.8 million square miles, representing a service area equivalent to more than one-half of the contiguous land area of the United States. The WSCC member systems provide electric service for approximately forty-four million people in the Region, including the Canadian provinces (see Table 1.10).

The resource mix for the WSCC Region is as varied as the area is vast. For the U.S. portion of the Region, hydro provides nearly thirty-seven percent, coal adds thirty-five percent, natural gas fourteen percent, nuclear gives a little over nine percent, oil provides nearly two percent, and other (alternatives) provide nearly five percent of the Region's electricity. The Canadian portion of the Region relies primarily on hydro (sixty-one percent) and coal (thirty-six percent).[92]

WSCC maintains a policy of sharing resources during times of system deficiencies and emergencies due to facility outages or to a delay in new facilities. In some cases the arrangement is formalized, such as in the California Power Pool system, which relies on a Master Mutual Aid Agreement for a crisis or emergency conditions. The concept is very similar to the mutual aid system in place in many of California's cities and counties.

In the event of a major system disturbance, WSCC, like other of the nine NERC Regions, relies on islanding schemes, planned remedial actions, and coordinated underfrequency load shedding programs to minimize the geographical area and number of customers affected, as well as the length of time the affected customers are without service. Islanding is a method of isolating certain portions of the interconnected system (the "grid") due to the tripping of transmission system elements (such as solid-state relays). In later discussions of the EED concept, the possibilities for <u>strategic</u>, controlled islanding, will be explored.

Table 1.10

WSCC MEMBER SYSTEMS

Anaheim, City of
Arizona Electric Power Cooperative, Inc.
Arizona Power Authority
Arizona Public Service Company
Basin Electric Power Cooperative
Black Hills Power & Light Company
Bonneville Power Administration
British Columbia Hydro & Power Authority
Burbank, City of
Colorado-Ute Electric Assoc., Inc.
Corps of Engineers (North Pacific Division)
Department of Water Resources/ California
Deseret Generation & Transmission Cooperative
El Paso Electric Company
Eugene Water & Electric Board
Glendale Public Service Department
Idaho Power Company
Imperial Irrigation District
Los Angeles Department of Water and Power
Metropolitan Water District/ Southern California
Modesto Irrigation District
Montana Power Company
Nevada Power Company
Northern California Power Agency
Pacific Gas & Electric Company
Pacific Power & Light Company
Pasadena, City of
Plains Electric Generation and Transmission Cooperative, Inc.
Platte River Power Authority
Portland General Electric Company
Public Service Co. of Colorado
Public Service Co. of New Mexico
PUD No. 1 of Chelan County
PUD No. 1 of Cowlitz County
PUD No. 1 of Douglas County
PUD of Grant County
Puget Sound Power & Light Co.
Riverside, City of
Sacramento Municipal Utility District
Salt River Project
San Diego Gas & Electric Co.
Santa Clara, City of
Seattle Department of Lighting
Sierra Pacific Power Co.
Southern California Edison Co.
Southern Colorado Power-Centel Corporation
Tacoma Department of Public Utilities
TransAlta Utilities Corporation
Tri-State G&T Association, Inc.
Tucson Electric Power Company
U.S. Bureau of Reclamation
Utah Power and Light Company
Washington Water Power Company
West Kootenay Power & Light
Western Area Power Administration

Affiliate Members

Farmington, City of
Lamar Utility Board
Navajo Tribal Utility Authority
Palo Alto, City of
Redding, City of
St. George, City of

Population Served: 44 million
Area Served: 1.8 million sq. feet
WSCC Headquarters: Salt Lake City Utah

1.6.3 The Private Sector's Role: State Level (California)

In 1942, as United States' involvement in World War II escalated, the Pacific Southwest Power Interchange Committee was formed. Composed of representatives of the then-interconnected electric power generating and distribution agencies which served the major portions of California, Arizona, and Nevada, the Committee was organized, "for the purpose of cooperating in an effort to assure an adequate power supply to support the national war effort."[93]

When California's civil defense program was activated in 1950, the Governor appointed a Utilities Advisory Committee, composed of nineteen men representing the utility field in California. The Governor established a policy whereby the utilities would continue to operate their own facilities during a state of emergency, in cooperation with the State administration. Those members of the Governor's Utilities Advisory Committee who represented water, gas and electric utilities throughout California, formed what is now referred to as the Utility Policy Committee.[94] As then, the Policy Committee is comprised of executives from California's major water, gas and electric utilities.

In 1952, the utilities established a statewide organization under a Joint Venture Agreement, which currently serves as the basis for the utilities' emergency preparedness effort. Based upon the normal day-to-day operations of each utility, a staff has been selected to represent the utility industry at the Governor's Office of Emergency Services in Sacramento and at each of OES' six mutual aid regional offices. Under provisions of the Agreement, utility personnel can serve, as requested, on the staff of local county and/or city emergency organizations.

The OES Utilities Division at OES headquarters is maintained by the utilities as a coordinating agency between the various utilities and between the utilities and other essential services (e.g., communications, public safety, fire and rescue, planning, etc.) of the OES. At the state level, the utilities operations staff consists of a Utilities Chief with alternates; the Utilities Coordinator; the Water Operating Engineer with

alternates; the Gas Operating Engineer with alternates; and the Electric Operating Engineer with alternates.[95] The Chief of the Utilities Division reports to the Director of the Office of Emergency Services during a declared emergency or state of war emergency, and is responsible for coordination of planning activities prior to disasters and for direction of state-wide operations of water, gas, and electric utilities during a crisis.

The State Operating Engineers for water, gas and electric, are appointed by the Director of the Office of Emergency Services, based on recommendations by the Utility Policy Committee and the approval of the Chief of the Utilities Division. The State Operating Engineers, or one of their alternates, are responsible for supervising the operations of all water, gas, and electric utilities during an emergency, under the direction of the Chief of the Utilities Division. All of the above-described people are regular utility employees except the Utilities Coordinator, (and his secretary), who work at OES headquarters in Sacramento and are paid employees of the Utilities Joint Venture.[96]

At the regional level, the utilities staff consists of the Water, Gas, and Electric Utility Service Coordinators who are assigned to the staff of each mutual aid Regional Manager in an advisory and coordinating capacity. In addition, Regional Water Operating Engineers in each region assist the State Water Operating Engineer.

Regional Water Operating Engineers are necessary because there are numerous water utilities in the state which generally serve limited territory, have few interconnections, and operate independently of one another. Since the electric and gas utilities are comparatively few in number and usually operate over larger areas serving more than one region, no regional gas and electric operating engineers have been appointed. The State Gas and Electric Operating Engineers exercise direct technical control over the gas and electric utilities; information is transmitted to and received from the utility service coordinators on the staffs of the OES Regional Managers.

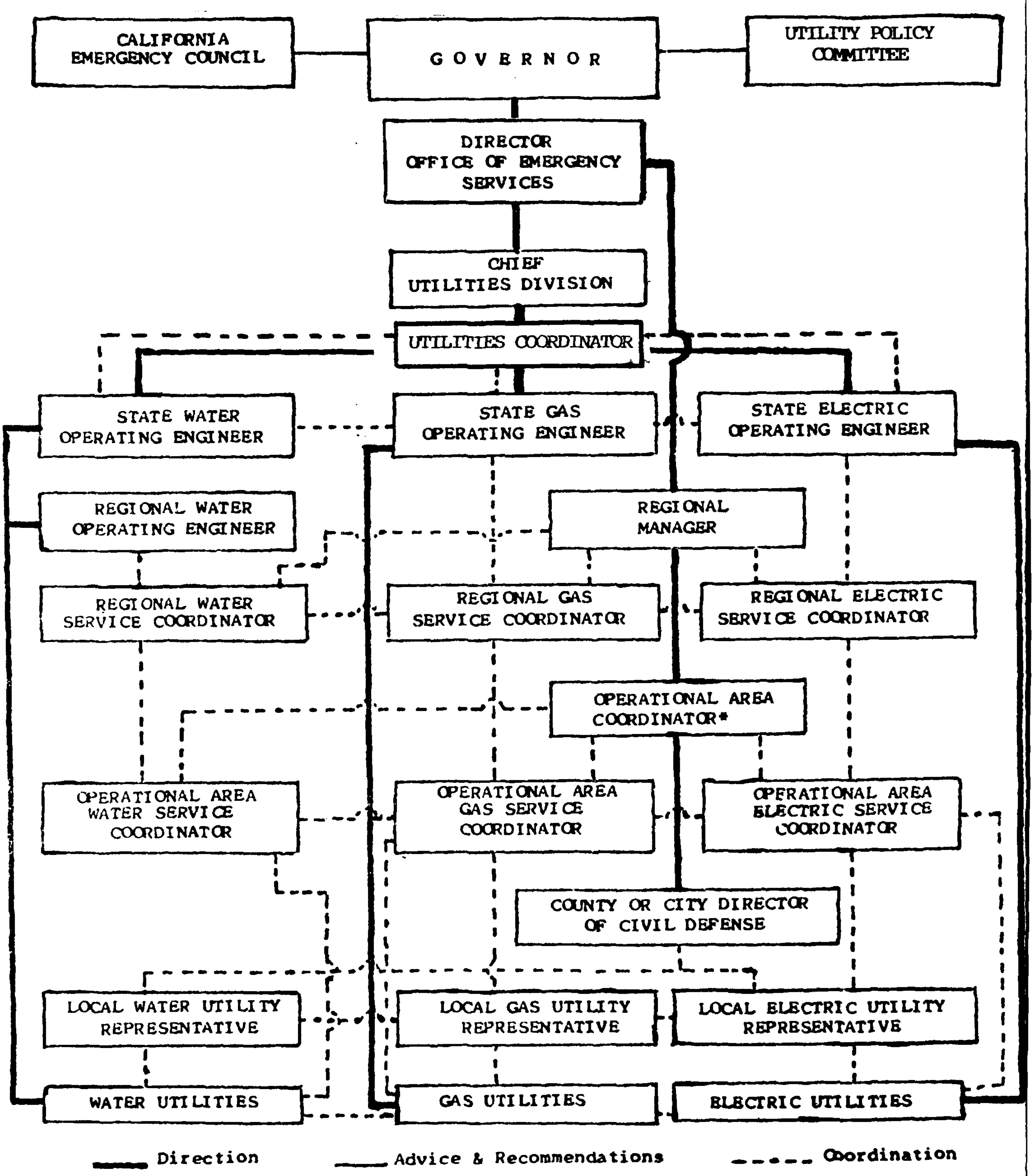
On the operational area or county and city level, water, gas, and electric representatives are appointed to serve on local emergency staffs in the same manner as do the Regional Service Coordinators. Such assistance as is available, is obtained from within the county area from surviving utilities. Requests for assistance are submitted to higher authority by the emergency operating center staff of each successive organizational level until the required assistance has been obtained. Figure 1.17 depicts the utilities service organizational relationships during a state of emergency or war emergency.

The initial Utility Policy Committee assisted in the development of the utilities' section of the State's basic emergency plan. Over the years, the utilities' responsibilities have been spelled out in a number of documents, including the current Utilities Emergency Plan,[97] the Emergency Resources Management Plan,[98] and the California Earthquake Response Plan.[99]

As with most state-level documents, specific procedures are not defined, but rather general operating guidance is provided. In the case of the utilities, the following excerpt from the Utilities Emergency Plan is instructive:

> The utilities industry has responsibility for providing water, gas, and electricity to support emergency operations to the fullest extent possible.
>
> The basic objective of utilities emergency planning is to minimize the effects of disaster upon the users of water, gas, and electricity. This involves measures designed to accelerate emergency repairs and restoration of service, an important aspect of which includes appropriate planning for the safety of operating personnel.
>
> This objective is in conformity with the prevailing tradition among utilities for self-help and mutual aid in emergencies. Each utility will first exhaust its own resources before calling upon a neighboring utility for aid, and each is prepared to accept and/or extend assistance as the need and circumstances may dictate.
>
> The general plan is to continue operation of utilities (water-gas-electric), subject to the requirements of the Director, OES.
>
> Certain general policies apply to all utility operations, whether following natural disaster or in a wartime emergency. These policies are as follows:

Figure 1.17
CALIFORNIA UTILITIES SERVICES
STATE OF EMERGENCY OR WAR EMERGENCY
ORGANIZATIONAL CHART



1. Manpower, equipment, supplies, and transportation facilities of specific utilities are reserved primarily for their individual utility operations or restoration.

2. Utilities personnel who are separated from their parent organizations will be under the supervision and direction of the management of the same types of supporting utility until their own management can resume control. (This provision applies primarily to employees of local utilities, whose operations are entirely within the damaged area.)

3. Mutual aid agreements provide for compliance with the prevailing priority systems relating to curtailment of customer demands or loads, restoration of service, and emergency service for other utilities or systems.

4. Utilities information will be furnished to governmental officials for use in informing the public regarding the proper utilization of service.

5. Engineering equipment and supplies not available from utility stocks, warehouses, or normal suppliers, may be requested through state agencies.

6. Manpower assistance, when required, may be requested through the Department of Human Resources Development [now called the Employment Development Department].

7. If supplemental public transportation facilities not available through normal sources are required by the utilities, requests may be submitted to [appropriate State agencies].

8. Emergency communications will be provided by the existing systems owned and operated by the utilities. Each utility will retain the use of its own communications systems, unless otherwise directed by proper authority.

   Utility traffic which cannot be transmitted by the interconnected utilities communication channels may be processed by the OES and/or auxiliary radio facilities obtained from military or other sources.

9. Provision has been made by the utilities for alternate headquarters and for the establishment of liaison with civil defense emergency operating centers.

10. The problem of continuity of utility management has been recognized in plans which designate the order of executive succession.

11. Duplicate sets of vital records, including maps and essential construction standards, are being maintained at strategic alternate storage locations.

12. Each utility includes, as a part of its normal operating procedures, appropriate measures to guard the security of its facilities against sabotage, theft, bombings, fire, or other disaster.

13. The utilities will perform radiological monitoring to protect operating personnel from fallout. Working time in contaminated areas and other such technical determinations will be coordinated with the Radiological Services (RADEF). Periodic reports of local radiation intensities will be transmitted to the nearest emergency operating center. [100]

Throughout the state, both private and public utilities maintain emergency plans. The majority of these plans were developed decades ago, and due to financial restraints, are rarely updated or practiced. In the case of the electric utilities, however, motivated by enlightened self- and public-interest, a recent development warrants consideration.

At their November 10, 1983 meeting, the Board of Control of the California Power Pool[101] created a special task force, "to review the reliability of the Pacific Intertie . . . system, and other . . . facilities serving the California Electrical system and to formulate recommendations regarding facilities and emergency maintenance preparedness."[102] The initial objectives for this task force were as follows:

- To identify vulnerable geographic transmission areas
- To assess overall reliability of present facilities
- To assess the adequacy of spare parts and tooling
- To assess alternative emergency repair strategies
- To assess mutual assistance arrangements [103]

Since their first meeting in December, 1983, the Emergency Preparedness Task Force has sought to, "establish itself as a 'Body' that will be recognized throughout the industry and among governmental agencies of having the ability to effectively deal with transmission line reliability and emergency maintenance matters as may become necessary."[104] The group is currently expanding its efforts to include other private and public utilities throughout the Western Systems Coordinating Council Region (see Section 1.6.2). Due to its expanding size, its scope and objectives have been redefined as follows:

Scope

This Task Force is initiated in recognition of the need for a means to adequately maintain and quickly restore damaged electric transmission facilities in the interconnected electric systems generally encompassed by the Western Systems Coordinating Council.

Objectives

To define common maintenance guidelines and practices of the electric transmission facilities.

To provide a forum to exchange ideas, experiences and solutions to maintenance, operating and engineering problems.

To encourage the development of a mutual aid assistance program between electric utility companies.

To exchange emergency transmission spare parts inventory information (345 kV and above).

To exchange information regarding emergency restoration of electric structures.

To identify conflicts in work procedures and rules affecting mutual assistance between utilities.[105]

As will be discussed in Part II, the concept that gave rise to the current research effort, that of Energy Emergency Districts, bears a striking functional resemblance to the objectives of the California Power Pool's Emergency Preparedness Task Force.

1.6.4 The Private Sector's Role: Local Level

As pointed out in the preceding section, utilities recognize their responsibilities to provide services to support emergency operations to the fullest extent possible, and have developed mechanisms for providing assistance at the county or city level. Most of the major energy-providing utilities maintain emergency operations or communications centers at their corporate headquarters. These centers serve to receive and transmit information to the public, to local, state and federal government officials, and to other utilities.

For the most part, a utility's response to an emergency will be guided by its system's technical constraints and its company's contractual obligations. These may or may not coincide with a local jurisdiction's overall needs to respond to a disaster condition. As a result, the activities of the respective emergency responders (utility and local government) tend to be concerted but distinct. Unless special, formal relationships have been established prior to an emergency, the two entities interface only super- ficially, on an ad hoc basis.

In California, there exists an exception to this situation. As discussed in Section 1.5, San Diego County has developed the Unified San Diego County Emergency Services Organization. Because of a unique relationship between the county's Office of Disaster Preparedness Director, and San Diego Gas & Electric Company's Emergency Preparedness Administrator (the utility administrator once held the county director's position), the two entities have had an especially close working arrangement. This arrangement allows SDG&E to have direct access to the county's Unified Disaster Council. They can use the Council if they wish a formal avenue to local government. The utility and the county cooperate in a number of ways to prepare for a major disaster. For example, they participate in one another's emergency exercises, have developed emergency communication agreements, and make almost daily communications on matters of mutual interest.[106]

More importantly, this relationship has been responsible for the development and activation of the Lifelines Task Force. The Task Force serves not only as a forum for lifeline providers (communications, water, gas, electricity, oil/ gasoline, etc.) to meet and share concerns, but as a means of doing pre-event planning and for developing contingencies in a coordinated and collaborative manner. This arrangement in which lifeline providers are able to work with a single, unified governmental entity, vs. a plethora of separate political and geographical jurisdictions, has advantages for both sides. Resources are compounded through centralization, communications are enhanced, confusion is reduced, and emergency services are provided expeditiously and efficiently.

This is not to suggest that other of California's major utilities, both private and public, do not have effective plans and emergency procedures. The degree to which these plans are known to and coordinated with local, state and federal emergency service organizations, is, however, limited.

1.7 Energy and Emergency Preparedness: Continuing Challenges

Throughout Part I of this report, special attention has been paid to delineating the respective roles and responsibilities of the various governmental and private sector entities who share responsibility for emergency energy resource preparedness. It has included governmental and private organizations at all levels of operation. Without an appreciation for the wide-ranging and complex relationships that currently exist, it is difficult to proffer a new concept (such as EEDs), let alone develop evaluated models of it. In order to "justify the necessity and benefits--and political operating feasibility--of proposed modifications,"[107] to a system, one must know what that system consists of, how it operates, who is responsible for what function, etc.

It should be noted, however, that despite the efforts of all involved, there is still room for improvement. The fact remains that the federal and state governments and private utility companies are still not adequately prepared to respond to a national crisis, war or mobilization effort, or a major regional disruption caused, for instance, by a planned, concerted terrorist attack. At the federal level, there remain a number of challenges:

- Coordination between FEMA and the DOE is limited and needs a specific mechanism for linking the two with respect to their shared responsibilities for emergency energy resource preparedness.

- The National Defense Executive Reserve (NDER) program and the Emergency Electric Power Executive Reserve program remain thwarted by federal conflict-of-interest laws.

- The Department of Energy's Emergency Electric Power Administration (EEPA) has been essentially dormant since 1977, and is only now beginning to be revitalized.

At all levels, the challenges include:

- Private utility company involvement in federal, state, and local preparedness efforts is limited and often lacks guidance and support.

- Emergency planning and preparedness is simply not a priority.

- There are no specific mandates for developing and coordinating utility emergency plans with local, state and federal jurisdictions.

- Contingencies for "worst case" scenarios such as a catastrophic earthquake or nuclear war are inadequate or nonexistent.

- National, regional, and local energy resource inventories are scattered among private and public entities, with little coordination or sharing among them.

- An efficient system for identifying and securing energy requirements for "critical facilities" and "priority users" does not exist.

- There continues to be disagreement as to what a "critical facility" or "priority user" constitutes by government standards, and yet utilities rely on government direction to determine where they should provide available energy resources in a declared emergency.

- The technology exists for developing resource inventories, for developing pre-agreements, and for pre-identification of critical and priority users, but leadership, organization, and management is currently lacking for this effort.

Part II begins the discussion of the Energy Emergency District concept, and describes the mission, goals, scope and methods of the California Energy and Emergency Preparedness Project. Recognizing the complexity of the situation, the Project's efforts to provide "evaluated options" of the District concept are offered as modest first steps to meeting some of the aforementioned challenges.

PART I: REFERENCES

1. W. Clark, et al. Energy, Vulnerability and War -- Dispersed, Decentralized and Renewable Energy Sources: Alternatives to National Vulnerabiity and War. Federal Emergency Management Agency, DCPA 01-79-C-0320, January 1981.

2. CSIS Science and Technology Committee. America's Hidden Vulnerabilities: Crisis Management in a Society of Networks. A Report of the Panel on Crisis Management, R. James Woolsey, Chairman and Robert H. Kupperman, Cochairman. The Center for Strategic and International Studies, Georgetown University, Washington, D.C., October 1984.

3. D.A. Freiwald, M.E. Berger, and J.F. Roach. DOD Energy Vulnerabilities. Los Alamos National Laboratory, Report No. LA 9485-MS, 1982.

4. Star Roxanne Hiltz and Murray Turoff. The Network Nation. Addison-Wesley, Reading, MA, 1978.

5. Robert H. Kupperman. Technological Advances and Consequent Dangers: Growing Threats to Civilization. Significant Issues Series, Vol. 6, No. 1. Center for Strategic and International Studies, Washington, D.C., 1984.

6. John R. Labadie. U.S. Industry Computer Dependency (Draft). Prepared by IRT Corporation for Defense Nuclear Agency, Federal Emergency Management Agency, Washington, D.C., 1984.

7. W. Clark, et al., op. cit.

8. Amory B. Lovins and L. Hunter Lovins. Energy Policies for Resilience and National Security. Final Report to the Council on Environmental Quality for the Federal Emergency Management Agency, DCPA-01-79-C-0317, November 13, 1981.

9. Charles K. Ebinger. The Critical Link: Energy and National Security in the 1980s (Revised). The Center for Strategic and International Studies, Georgetown University, Washington, D.C., 1982.

10. U.S. Department of Energy. Report on the Electric Power System Disturbance of December 22, 1982, Affecting the Western United States. Assistant Secretary for International Affairs and Energy Emergencies, Office of Energy Emergency Operations, Washington, D.C., DOE/IE-0001, February 1984.

11. Commonwealth Associates Inc. Analysis of Storm Related Outages and Restoration Measures -- Washington, D.C. Metropolitan Area. Prepared for U.S. Department of Energy, Assistant Secretary for Environmental Protection, Safety and Emergency Preparedness, Office of Energy Emergency Operations, Washington, D.C., DOE/RG/06674-T2 (NTIS), December 1981.

Part I: References (cont'd)

12. Commonwealth Associates Inc. Investigation into Outages of Electric Power Supply as the Result of Ice Storms. Prepared for U.S. Department of Energy, Economic Regulatory Administration, Division of Power Supply and Reliability, Washington, D.C., DOE/RG/6674-T1 (NTIS), September 1979.

13. Gail Bass. Actions Against Nonnuclear Energy Facilities: September 1981-September 1981. Rand Corporation, Santa Monica, CA, April 1983.

14. Gail Bass, Brian Jenkins, and Konrad Kellen. "The Appeal of Nuclear Crimes to the Spectrum of Potential Adversaries." Rand Corporation, Santa Monica, CA., RAND/R-2803-SL, March 1982.

15. Gail Bass, et al. Motivations and Possible Actions of Potential Criminal Adversaries of U.S. Nuclear Programs. Rand Corporation, Santa Monica, CA, February 1980.

16. Gail Bass and Brian M. Jenkins. A Review of Recent Trends in International Terrorism and Nuclear Incidents Abroad. Rand Corporation, Santa Monica, CA, 1983.

17. Peter deLeon, Brian Jenkins, Konrad Kellen, Joseph Krofcheck. Attributes of Potential Criminal Adversaries of U.S. Nuclear Programs. A report prepared for Sandia Laboratories, The Rand Corporation, Santa Monica, CA, R-2225-SL, February 1978.

18. John L. Scherer. Terrorism: An Annual Survey, Volume 2. J.L. Scherer, Minneapolis, MN, 1983.

19. Amory B. Lovins and L. Hunter Lovins. Brittle Power: Energy Strategy for National Security. Brick House Publishing Company, Andover, MA, 1982.

20. Ibid.

21. Robert K. Mullen. Potential Saboteurs to DOE Programs: Attributes and Inferences, Final Report. Advanced Technology Associates, Inc., Dublin, CA, ATAR 1014.80, September 1980.

22. Electric Research & Management, Inc. EMP Analysis. Electric Power Research Institute, Palo Alto, CA, EPRI EL-3172, July 1983.

23. U.S. Congress, Office of Technology Assessment. The Effects of Nuclear War. U.S. Government Printing Office, Washington, D.C., OTA-NS-89, May 1979.

24. U.S. Department of Defense, Defense Civil Preparedness Agency. "What the Planner Needs to Know About Electromagnetic Pulse," DCPA Attack Environmental Manual, Washington, D.C., CPG-2-1A4, June 1973.

25. E.K. Stanek. Feasibility of Isolating Vulnerable Equipment of the Electric Power System from Sources of EMP. U.S. Department of Energy, Economic Regulatory Administration, March 1978.

26. U.S. General Accounting Office. Federal Electrical Emergency Preparedness Is Inadequate. Report to the Congress, Washington, D.C., EMD-81-50, May 12, 1981.

27. U.S. General Accounting Office. The Federal Government is Still Not Adequately Prepared to Respond to Major Electrical Emergencies. Report to the Chairman, Subcommittee on Energy, Environment and Safety Issues Affecting Small Business, Committee on Small Business, House of Representatives, Washington, D.C., GAO/EMD-82-125, September 13, 1982.

28. U.S. General Accounting Office. The U.S. Remains Unprepared for Oil Import Disruptions, Volumes 1 and 2. Report to the Congress, Washington, D.C., EMD-81-117, September 29, 1981.

29. Robert A. Harker and Allen E. Wilmore. Emergency Evacuation Management Requirements and Concepts: Summary Report. Second Annual Energy R&D Priorities Workshop, Aspen, CO, July 13-17, 1979.

30. U.S. General Accounting Office. The Federal Emergency Management Agency's Plan for Revitalizing U.S. Civil Defense: A Review of Three Major Plan Components. Report by the Comptroller General to the Chairman, Subcommittee on HUD/Independent Agencies, Committee on Appropriations, United States Senate, Washington, D.C., GAO/NSIAD-84-11, April 16, 1984.

31. Robert A. Harker and Allen E. Wilmore, op. cit.

32. Federal Emergency Management Agency. "Integrated Emergency Management System (IEMS)." IEMS Steering Committee, Washington, D.C., September 1984.

33. U.S. General Accounting Office. The Federal Emergency Management Agency's Plan for Revitalizing U.S. Civil Defense, op. cit.

34. Robyn Boyer Stewart. Interview with Laura Buchbinder, Chief, Standards and Assessments, Emergency Management Programs Office, Federal Emergency Management Agency, Washington, D.C., October 22, 1984.

35. U.S. General Accounting Office. Federal Electrical Emergency Preparedness is Inadequate, op. cit.

36. U.S. Department of Energy. Summary Outline: Energy Supply Vulnerability Assessment Program (Draft). Office of Energy Emergency Operations, Washington, D.C., June 11, 1982.

37. Robyn Boyer Stewart. Interviews with Richard F. Weiner, Director; I. Edward Markley, Electrical Engineer; Albert F. Bass, Chief, Energy Supply Risk Assessment Branch; and Yvonne Allen, Chief, Liaison and Emergency Reserve Program Branch. U.S. Department of Energy, Office of Energy Emergency Operations, Washington, D.C., October 23, 1984.

38. U.S. Department of Energy. Power System Emergency Reporting Procedures. Assistant Secretary of Environmental Protection, Safety and Emergency Preparedness, Office of Energy Emergency Operations, Washington, D.C., DOE/EP-0071/1, September 1983.

39. U.S. Department of Energy. "Critical Components Project" (Statement of Work). Office of Energy Emergency Operations, Washington, D.C., no date.

40. U.S. General Accounting Office. Federal Electrical Emergency Preparedness Is Inadequate, op. cit.

41. John R. Labadie. Electric Power Emergency Handbook. U.S. Department of Energy, Economic Regulatory Administration, Office of Utilities Systems, Emergency Electric Power Administration, Washington, D.C., DOE/RG/10327-01, September 1980.

42. Electric Research & Management, Inc., op. cit.

43. James W. Kerr. "Military Support of Civil Authority," Military Review, July 1970.

44. U.S. Department of Defense, Defense Supply Service. "Request for Proposal for Research Entitled, 'Development of Earthquake Preparedness and Response Measures'." The Pentagon, Washington, D.C., RFP No. MDA903-84-R-0075, March 15, 1984.

45. Ibid.

46. State of California Legislature. "California Emergency Services Act," Chapter 7 of Division 1 of Title 2 of the Government Code (Statutes of 1970, Chapter 1454), as amended in the Regular Session. Sacramento, CA, 1981-82.

47. State of California, Office of Emergency Services. State of California Emergency Plan. Sacramento, CA, August 1975, Revised 1984.

48. Ibid.

49. State of California Disaster Office. Emergency Resources Management Plan. Sacramento, CA, January 9, 1968.

50. Ibid.

51. California Energy Commission. California Energy Shortage Contingency Plan. Sacramento, CA, P400-83-039, December, 1983.

52. Ibid.

53. Ibid.

54. California Energy Commission. California Energy Shortage Contingency Plan, Appendix A: Energy Emergency Management Plan. Staff Draft prepared for the Energy Contingency Planning Committee by B.B. Blevins, Liquid Fuels Conservation and Contingency Planning Office, Sacramento, CA, January 1983.

55. California Energy Commission. California Energy Shortage Contingency Plan, Appendix B: California Energy Emergency Information Plan. Staff Draft prepared for the Energy Contingency Planning Committee by Bill Tippets, Liquid Fuels Conservation and Contingency Planning Office, Sacramento, CA, January 1983.

56. California Energy Commission. California Energy Shortage Contingency Plan, Appendix C: Emergency Reductions In Energy Demand. Staff Draft prepared for the Energy Contingency Planning Committee by B.B. Blevins, Liquid Fuels Conservation and Contingency Planning Office, Sacramento, CA, January 1983.

57. California Energy Commission. California Energy Shortage Contingency Plan, Appendix D: California Fuel Set-Aside Programs. Staff Draft prepared for the Energy Contingency Planning Committee by Bill Tippets, Liquid Fuels Conservation and Contingency Planning Office, Sacramento, CA, January 1983.

58. California Energy Commission. California Energy Shortage Contingency Plan, Appendix E: Distribution of Federal Funds During an Oil Supply Emergency. Staff Draft prepared for the Energy Contingency Planning Committee by Dennis Fukumoto, Liquid Fuels Conservation and Contingency Planning Office, Sacramento, CA, January 1983.

59. California Energy Commission. California Energy Shortage Contingency Plan, Appendix A, op. cit.

60. California Energy Commission. California Energy Shortage Contingency Plan. Sacramento, CA, P400-83-039, December 1983.

61. California Energy Commission. California Energy Shortage Contingency Plan, Appendix A, op. cit.

62. Ibid.

63. Public Utilities Code, Sections 2771-2775 (Division 1, Part 2, Chapter 4.5).

64. Decision 86081 (1976) 80 CPUC 157; Decision 87241 (1977) 81 CPUC 551; Decision 90427 in OII 43 (1979) 1 CPUC 2d 761; Decision 91548 - April 15, 1980 (unreported); Decision 92315 - October 8, 1980 (unreported); Decision 93046 - May 19, 1981 (unreported).

65. Decision 82-06-021 - June 2, 1982 - Final Opinion in CPUC Case 9884.

66. Ibid.

67. State of California, Office of Emergency Services, Fire and Rescue Division. Fire Service Mutual Aid Resources InventorY. Sacramento, CA, Form F-5, Revised January, 1984.

68. State of California, Office of Emergency Services, Fire and Rescue Division. Operations Bulletin No. 31: Instructions For Compiling Fire Service Mutual Aid Resources Inventory (Form F-5). Sacramento, CA, Revised January, 1984.

69. Peggy Mensinger. "City of Modesto Methane Recovery System," Information Bulletin No. V. Energy and Emergency Preparedness Project, Sacramento, CA, September, 1984.

70. Daniel J. Eberle, Director, Office of Disaster Preparedness, Unified San Diego County Emergency Services Organization. Personal correspondence to Robyn Boyer Stewart, December 19, 1984.

71. Daniel J. Eberle, Director, Office of Disaster Preparedness, Unified San Diego County Emergency Services Organization. Memorandum to Chief Administrative Officer, San Diego County, September 20, 1984.

72. Ken Cory. Financial Transactions Concerning Special Districts of California : Annual Report 1979-1980. State Controller's Office, State of California, Sacramento, CA, 1981.

73. Robert B. Hawkins, Jr. Self Government By District: Myth and Reality. Hoover Institution Press: Stanford University, Stanford, CA, 1976.

74. Houston Lighting & Power Company. The Alicia Story: How Houston Lighting & Power Company Responded to Hurricane Alicia. Houston, Texas, August, 1983.

75. Electric Research & Management, Inc., op. cit.

76. Ibid.

77. Ibid.

78. U.S. General Accounting Office. Federal Electrical Emergency Preparedness Is Inadequate, op. cit.

79. Electric Research & Management, Inc., op. cit.

80. Robyn Boyer Stewart. Interviews with Richard F. Weiner, et al., op. cit.

81. Reliability and adequacy are separate but interdependent aspects of bulk power supplies. Reliability involves the security of the interconnected transmission network and the avoidance of uncontrolled cascading tripouts that may result in widespread power interruptions. Adequacy refers to having sufficient generating capability to meet the electric demands of all customers.

82. Electric Research & Management, Inc., op. cit.

83. Ibid.

84. North American Electric Reliability Council (NERC). Annual Report 83, Richard O. Newman, Chairman, Princeton, New Jersy, 1984.

85. Ibid.

86. Ibid.

87. Ibid.

88. Ibid.

89. North American Electric Reliability Council. 14th Annual Review of Overall Reliability & Adequacy of Bulk Power Supply in the Electrict Utility Systems of North America--1984. Interregional Review Subcommittee, Princeton, New Jersey, 1984.

90. Ibid.

91. lbid.

92. Ibid.

93. N.B. Hinson, Chairman, Pacific Southwest Power Interchange Committee. Personal correspondence to James B. Black, President, Pacific Gas & Electric Company, October 18, 1943.

94. State of California, Office of Emergency Services, Utilities Division. Disaster Preparedness for California Utilities. Sacramento, CA, May, 1983.

95. State of California, Office of Emergency Services, Utilities Division. Utilities Emergency Plan. Sacramento, CA, February 1, 1978.

96. Ibid.

97. Ibid.

98. State of California Disaster Office. Emergency Resources Management Plan, op. cit.

99. State of California, Office of Emergency Services. California Earthquake Response Plan, Southern San Andreas Fault (Draft). Sacramento, CA, July, 1983.

100. State of California, Office of Emergency Services, Utilities Division. Utilities Emergency Plan, op. cit.

101. The California Power Pool is a legal consortium of California's major electric utilities.

102. J.T. Head, Chairman, California Power Pool, Board of Control. Personal correspondence to G.P. Gaebe, Chairman, California Power Pool, Engineering & Operating Committee, November 16, 1983.

103. Ibid.

104. J.D. Eckman, Chairman, California Power Pool Emergency Preparedness Task Force. Minutes of Emergency Preparedness Task Force Meeting, San Diego, CA, September 13, 1984.

105. Ibid.

106. Robyn Boyer Stewart. Interview with James W. Hunt, Emergency Preparedness Administrator, San Diego Gas & Electric Company, San Diego, CA, November 14, 1984.

107. Robert A. Harker and Allen E. Wilmore, op cit.

AD-A158 277 ENERGY EMERGENCY DISTRICTS: CONCEPTS AND APPLICATIONS 2/4
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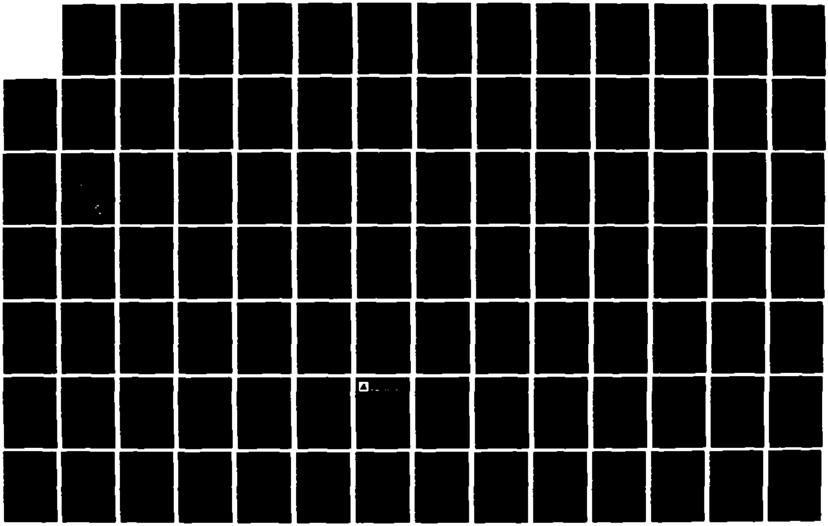

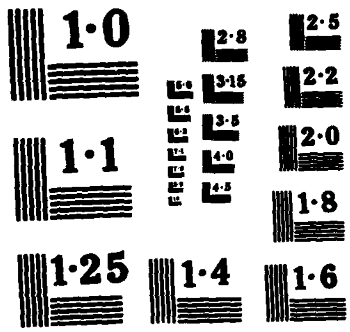
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ENERGY EMERGENCY DISTRICTS:
CONCEPTS AND APPLICATIONS

PART II: EXPLORING SOLUTIONS
DEVELOPING EED MODELS

2.1 Introduction

Part I of this report provided a summary description of some of the problems which originally gave rise to the idea for developing models of Energy Emergency Districts. This background was given an organizational context, with a comprehensive description of the many public and private organizations who share responsibility for emergency energy resource preparedness, from the national to the local level.

The Energy and Emergency Preparedness Project was created as a means of exploring variations of the EED concept. Several challenges faced the effort, including how to reduce the complexity of the problem into simple and workable structures, how to apply a unique and innovative methodology (Collaborative Problem Solving Process) to a highly complicated and at times conflicting set of project agendas, and how to ensure that the interests and concerns of the many individuals and organizations who might be affected by the implementation of the EED concept be aired. Part II describes the conduct of work of the Project, its mission, goals, scope, and findings. Many persons contributed to the results. The several "evaluated options," and the lessons learned from the development of those options, are offered as a collaborative effort.

2.2 Project Mission

The California Energy and Emergency Preparedness Project was funded by the Federal Emergency Management Agency to develop the concept of Energy Emergency Districts (EEDs). EEDs were initially defined as <u>units of analysis</u> for performing a number of functions outlined in an earlier FEMA contract study.[1] The functions to be performed by EEDs were as follows:

1. To conduct and maintain a comprehensive inventory of locally and regionally available conventional and alternate fuel sources, energy technologies, and energy conversion equipment, to include power facilities, prime movers, motors, cogeneration systems, critical components, supplies, and necessary skills and personnel who have them.

2. To identify, prior to an emergency, priority energy users and critical facilities in the event of a crisis or central system disruption and to conduct local training programs for use of existing alternate facilities and equipment.

3. To coordinate available funding and develop stockpiles of key energy components, fuel storages, parts and alternate equipment which would be needed in an emergency.

4. To serve as a local coordinating agency for the allocation of energy resources in an emergency. [2]

2.3 Goals of the Research

The goals of the Project's research were (1) to create transferrable, replicable models of the EED concept for national application, based on the California example, and (2) to evaluate the models for feasibility and for possible implementation.

2.4 Scope of the Research

The scope of the research was broadly defined as exploratory, the work to be conducted in several phases, and limited to the California example. A two-day, statewide conference, designed according to the principals of the Collaborative Problem Solving Process,[3] was selected as the means of exploring and evaluating the geographical, functional, legal, administrative, and fiscal parameters of EED models (see Section 2.5 for discussion of the research methodology).

Phase I entailed pre-conference preparations which included the following considerations:

1. Development of a blue-ribboned Advisory Board to help guide and structure the Project's conference;

2. Design of a "collaborative conference" to bring together a wide and representative range of energy and emergency professionals to develop and evaluate the EED concept;

3. Development of a common information base for conference participants which would serve as background and a common point of departure for large and small group discussions;

4. Development by the Advisory Board of preliminary EED models, for further discussion and evaluation by the conference participants.

5. Development of criteria for evaluating the EED models;

Phase II was the convening of the conference, October 1-3, 1984 in Sacramento, California. Phase III entailed the analysis of the conference findings, and the development of this report.

2.5 Methodology/Research Approach

The scope of the Project's work required that background information be developed, not only for the conference but for the final report. To this end, an extensive literature review was conducted in subject areas thought relevant to the Project's goals. Those areas included energy system vulnerability and types of disasters; energy requirements for various emergency scenarios; legal and organizational issues related to special district formation; background on energy system operations; emergency planning and preparedness concepts; and organizational and management theories and practices.

This archival research was augmented by a series of interviews conducted to investigate the nature and extent of emergency energy resource preparedness in

California. Representatives from the public and private sector were interviewed regarding utility company plans and procedures; regulatory agency involvement in preparedness issues; state-level emergency plans and procedures, and local emergency plans and procedures.

Finally, an "action research" approach was taken through the use of the Collaborative Problem Solving Process for the conduct of parts of Phase I and all of Phase II. The innovative nature of this process warrants discussion since it served as the means for exploring the EED concept.

2.5.1 The Collaborative Problem Solving Process

The Collaborative Problem Solving Process (CPSP) is a method used to define, analyze and solve problems in a group setting. The following is a summary of basic elements of the Interaction Process:[4]

- Decision-making by consensus;
- Well-defined line of authority;
- Clearly defined, agreed-upon goals and objectives;
- Common group focus;
- Clearly defined roles

Decision-making by consensus

Consensus is reached when everyone in a group can "buy into" (or live with) a decision without feeling compromised in any way. This is referred to as a "win/win" solution. It is self-evident that a decision in which everyone involved feels they have won something will be more easily implemented by those people than a decision made where some of the people feel they have lost.

If consensus cannot be reached, a group can always fall back on some win/lose method like voting or executive decision. Even if a group has to resort to win/lose decision making, the experience of searching collaboratively for a win/win solution encourages group members to develop an understanding of complex issues and gain the satisfaction of having had an opportunity to participate in developing the best possible alternatives.

Well-defined line of authority

All groups and organizations (and their meetings) are hierarchical or horizontal. At each level of a hierarchical organization the authority and responsibility for making decisions rests with one individual. Most large organizations are hierarchies: corporations, government agencies, educational institutions, hospitals, etc. In a hierarchical meeting, only one person has the final say -- and therefore the final decision in the event consensus cannot be reached using the collaborative process.

In horizontal groups and organizations, the authority and responsibility for making decisions rests with a specific group of people; final decisions can only be made by a vote of a quorum -- the method invoked if consensus through collaboration cannot be reached.

Clearly defined goals and objectives

Clearly defined, agreed-upon goals and objectives, upon which the group agrees to work, are essential. With a well thought out (designed) agenda, group members can come prepared with appropriate materials and a well-defined expectation as to what is going to happen at the meeting, what their particular role is, and what needs to be accomplished in the time allotted for the meeting.

Common focus

To achieve a common focus the group must agree on "what" they are going to discuss (problem, topic, or agenda), as well as "how" they are going to discuss it (approach, method or process). When a group of people come together there is not an inherent single focus. In fact there are as many foci as there are individuals in the group. To work effectively, the entire group must be focussed on the same thing at the same time. In most meetings, the manager with the most authority and decision-making power takes on the responsibility of trying to keep the group on a common focus. Thus the manager controls how the meeting proceeds, what is to be discussed, and makes all final decisions as well as deals with conflict between participants/sub-

ordinates. This can result in the manager trying to play too many roles at one time. No matter how experienced, efficient and smart he or she is, the manager can not do an effective job of fulfilling all of these important and conflicting roles at once.

Clearly defined roles

In the Collaborative Problem Solving Process, four roles are distinguished for meeting participants: the traditional role of group member and manager/chairperson; and two nontraditional roles called Facilitator and Recorder, created specifically for the purpose of maintaining group focus.

The facilitator is a neutral member of the group who guides the process, or "how" the group discusses "what" is to be discussed. As a neutral member the facilitator does not evaluate or contribute ideas nor have any decision making power. The responsibility of the facilitator is to help the group focus its energies on a task by suggesting methods and procedures, dealing with conflict between participants, protecting all members of the group from attack, and making sure that everyone has an opportunity to participate.

The recorder is also a neutral, nonevaluating member of the group. The recorder maintains the group's minutes in a process called "recording the group memory." Like the facilitator, the recorder does not interject his or her own ideas and does not have decision-making powers. A recorder's role is to capture the basic ideas of the group on large sheets of paper in full view of the group. The recorder does not edit or paraphrase, but uses the words of each speaker. The objective is not to record everything that is said, but to capture enough so that ideas can be preserved and recalled at any time. In this way, the act of recording does not significantly slow down the progress of the meeting. The record itself is called the group memory and serves as an accepted record of what is happening as it is happening. This allows participants to relax and share ideas in the knowledge that their contributions have been heard and preserved.

The group memory is preferred to an individual taking notes because all participants can see the memory during the meeting, which helps to eliminate

disagreement later as to what was actually said. In addition, any latecomers to the meeting can catch up with the group by reading the group memory. They do not have to disrupt the meeting and have someone backtrack for them to understand what has been accomplished. The group memory is most useful for helping the group to focus on the same information at the same time.

The group member is an active participant in the meeting. It is the responsibility of the group member to keep the facilitator and recorder in their neutral roles, and to make sure that ideas are recorded accurately. As long as the meeting is being run by the Interaction Method, the control of what happens rests in the hands of the group members. They can make procedural suggestions, overrule the suggestions of the facilitator, and generally determine the course of the meeting. Otherwise the group member devotes his or her total energies to the task at hand.

The manager/chairperson, under the ground rules of the Collaborative Problem Solving Process, does not run the meeting, but becomes an active participant. Otherwise, he or she retains all other powers and responsibilities. The manager makes all final decisions; has the power to set constraints and regain control if not satisfied by the progress of the meeting; sets the agenda; and argues actively for his or her point of view.

It has been shown that conferences can be organized and implemented along the same principles as task-oriented meetings run by the Collaborative Problem Solving method.[5] The key is that large groups can be subdivided into smaller groups for effective results. The problem of managing the conference is reduced to orchestrating a process that moves like an accordion, from the large group to smaller groups and back to the large group for final resolution.

The first principle of the collaborative process is: If you don't agree on the problem, you'll never agree on the solution. In a collaborative process everyone must proceed together phase by phase from defining and analyzing problems to generating and evaluating alternatives, and finally to decision making. In the Collaborative Problem Solving Process model there are nine phases or steps:

1. Perception of the problem

2. Definition of the problem

3. Analysis of the problem

4. Alternative Generation (developing alternative solutions)

5. Alternative formation (forming or "fleshing out" the alternatives)

6. Evaluation (of the alternatives)

7. Decision Making (choosing the best of the evaluated alternatives)

8. Implementation (implementing the decision)

9. Decision Evaluation (evaluating the implemented decision to determine how well it actually "solved" the problem)

The second principle of the Collaborative Problem Solving Process is that the process of designing and developing ownership of the agenda of the conference must begin long before the conference begins and continue until its end. The third principle is: The success of the conference will be determined to a large extent by the quality of the small-group discussions. Furthermore, for successful conferences of this sort, trained, neutral facilitators and recorders are essential. The fourth principle is: Task-oriented conferences require different kinds of spaces than typical conferences or workshops, and the fifth principle is: Large groups have limited functions.[6]

In the next section (2.6 Results), a discussion of the application of the Collaborative Problem Solving Process to the exploration of the "problem" of forming evaluated models of the EED concept will be discussed.

2.6 Results: Phase I

Public policy decision-making is a complex process requiring agreement among agencies and organizations with competing or opposing interests. Most

decision-making strategies for public policy involve attempts to resolve conflicts after a decision has been made. The result is often resistance to the decision and long delays as negotiations are carried out between the decision-makers and organizations with the power to block implementation of the policy decision.

The Energy and Emergency Preparedness Project was designed to involve the people at all levels who would be responsible for the implementation of the proposed EED concept in the analysis and critique of the concept <u>before</u> it was finalized. The purpose of the Advisory Board and of the conference itself was to develop evaluated models of the EED concept for national application which included the objections and concerns of those who would have the responsibility for implementing them. This process, it was reasoned, would then enhance the possibilities for timely and smooth implementation of the concept, and at the very least, help to identify actual or potential areas of disagreement or other problem areas.

Since a wide range exists of private and public organizations with diverse and sometimes conflicting interests in policies affecting energy management and emergency preparedness (see Part I), it was essential to elicit advice from individuals who could accurately represent each interest group. Thus, an Advisory Board was formed based on their expertise, responsibility and decision-making authority within those vested interest groups throughout California. The group selected provided a comprehensive representation of the cognizant state and federal agencies, departments, and commissions related to energy policy and emergency preparedness policy. The private sector was also represented through the inclusion of the Independent Power Producers Association, and the private utility companies. Appendix A is a list of the Project's Advisory Board.

The Advisory Board was responsible for identifying conference participants, developing initial models of the EED concept, suggesting and reviewing the information base to be distributed to the conferees, for guiding the development of the conference design, and for reviewing the conference findings. A series of Advisory Board meetings were held using the Collaborative Problem Solving Process, and three subcommittees of the Advisors were established: Process Design, Workbook Development, and Participant Selection.

To identify potential conference participants, Advisors were asked, "What kinds of people can help us explore the EEDs concept?" Each Advisor was then asked to nominate ten individuals within or across the resulting categories who, in their opinion, could best address the questions related to forming and evaluating Energy Emergency Districts. The intended result was to include a full range of persons representing those groups interested in, or affected by any policy changes resulting from Project recommendations. Several Advisors volunteered to serve on the Participant Selection Committee to consolidate the categories into a final list, and to review the list of nominees and make their recommendations. Following the Committee's report, the Board finalized the list of nominees to be recommended to the Board Chairman for his approval and invitation. Invitations to those nominees were sent and included a brief discussion of the conference goals, an orientation to the Collaborative Problem Solving Process, and an introduction to the Project's "information bulletin" concept. Table 2.1 gives the conference participant categories and the number of individuals invited to represent each category.

Two difficulties arose early in the conduct of the work in Phase I. The first was how to apply the Collaborative Problem Solving Process to the "problem" of developing EED models. The second, related difficulty, was how to limit the scope of the "problem" without pre-defining solutions.

Table 2.1

ENERGY AND EMERGENCY PREPAREDNESS PROJECT
CONFERENCE PARTICIPANT CATEGORIES

	Conference Participant Categories	Total N
1.	Commercial Vendors/Small Power Producers	11
2.	Local Elected Officials	7
3.	Local Emergency Response Providers (Examples: Hospitals, Schools, Red Cross, Police and Fire Departments)	10
4.	Local Emergency Coordinators (California's 58 County Emergency Services Coordinators)	59
5.	City Managers, County Administrators, Public Works Directors	18
6.	Policy/Legal/Theory Experts	14
7.	Private Sector Emergency Planners	8
8.	Utility Operations Managers/Dispatchers	14
9.	Military Personnel	5
10.	Financial Experts	11
11.	Federal Agency Representatives	6
12.	Regional Representatives	5
13.	Media/Public Information Officers	11
14.	CalTrans/Local Transit District Representatives	5
15.	Major Energy Users: Agriculture, Industry, Residential, Communications	11
16.	Technical Energy Experts	9
17.	Major Non-utility Energy Providers (Examples: Oil and Gas Companies)	5
		209

Figure 2.1 illustrates the relationship between the Collaborative Problem Solving Process and the goals of the Energy and Emergency Preparedness Project. Referring to the nine phases of problem solving (see Section 2.5), the following description is instructive:

> People generally go through these phases in their heads when solving a problem. When there is a large group of people, it is important if consensus is desired, to have everyone be "in the same phase" at the same time. A group cannot focus effectively when one person is analyzing a problem while another person is still trying to define the problem.
>
> Studies over the last decade have looked at the issue or "problem" of energy dependence and vulnerability. The perception of this problem was that dependency equals vulnerability and that effective local emergency response is dependent on a reliable, uninterruptable supply of energy for vital support systems. The definition of the problem became, "How to reduce energy vulnerability and secure an available supply of energy in an emergency?" A number of analyses were performed and a number of alternatives were generated.
>
> In terms of the problem solving model, these studies considered the first four stages of problem solving: perception through alternative generation. One of the alternative solutions generated was the concept of the Energy Emergency District. FEMA has funded the Energy and Emergency Preparedness Project to carry out the work necessary to complete the next two phases of the problem solving model: that is, Alternative Formation and Evaluation.[7]

With respect to the second difficulty, that of defining the scope of an EED (or the scope of the problem an EED would be geared to address), only the most general outline was provided, to include damage to or inoperability of (1) energy production or generation capabilities, (2) transmission capabilities, (3) distribution capabilities, (4) communication systems, and (5) storage capabilities (primarily natural gas). The type and magnitude of disaster that could potentially affect any one of these five areas was also left deliberately open-ended.

In this context of energy system vulnerability, Advisors were asked to consider a number of actual emergency situations that had happened (e.g., major wind storms at Altamont Pass, California, in December, 1982; high tides and storms which totally flooded California coastal areas in 1982; terrorist attacks on small substations), and to describe what their priorities would be in a given emergency. The exercise was an attempt to sensitize each Advisor to how different professional responsibilities lead to different perceptions of what a problem is, and thus what a priority would be. The Advisors'

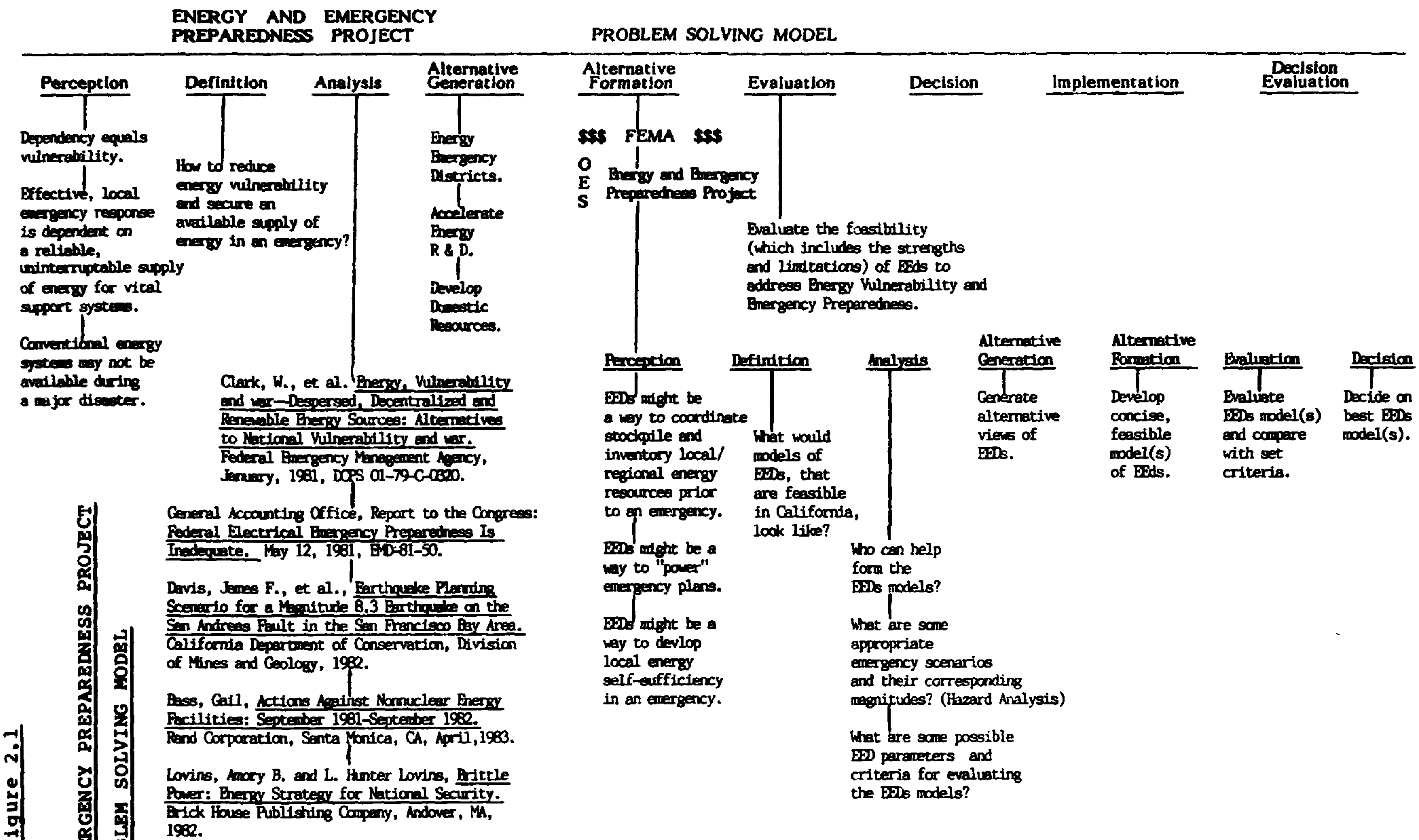


Figure 2.1

ENERGY AND EMERGENCY PREPAREDNESS PROJECT

PROBLEM SOLVING MODEL

Advisors' responses were instructive and provided confirmation of the claim that one person's perception of the problem can be quite different than another person's, even though the definition of the problem is the same.

After this problem perception exercise, Advisors were asked to generate alternative views or perceptions of Energy Emergency Districts. They were asked, "What kinds of things would you have to consider in forming an Energy Emergency District?" This "brainstorming" was consonant with the Collaborative Problem Solving Process and yielded a number of qualities or parameters that Advisors considered necessary for developing EED models. These basic considerations were: Boundaries, Functions, Legal Structure, Authority (or Administrative Structure), and Fiscal Structure. Based on these parameters, Advisors were then asked to provide short descriptions of their initial perceptions of EED models.

In addition to their responsibility to select conference participants, Advisors were asked to recommend topics for developing a common information base for the conference, which would serve as background and a common point of departure for large and small group discussions. The Advisors were asked to decide what types of information should be provided to prepare the participants (later called Project Associates) to analyze the EED concept, and to develop and evaluate replicable models of it. Topics recommended included energy system vulnerability, local government energy (and emergency) strategies, energy emergency contingency planning, alternative energy technologies, emergency communication systems, the Collaborative Problem Solving Process, electromagnetic pulse and the potential role of EEDs, and the like. Ten Information Bulletins were authored by a number of Advisors, Associates and by Project staff. Table 2.2 is a list of the Bulletins prepared for the conference. The complete set is included in Appendix B, available under separate cover.

During Phase I, it became apparent from trying to merge the concerns and jargon of two different and often separate disciplines (i.e., that of energy and that of emergency management), that glossaries of terms would be useful. Accordingly, Project staff developed glossaries of terms for emergency management concepts, energy, and collaborative problem solving.

Table 2.2

ENERGY AND EMERGENCY PREPAREDNESS PROJECT

INFORMATION BULLETINS

I. Energy Emergency Districts: Background and Models
by Robyn Boyer Stewart

II. Collaborative Problem Solving and the Energy and Emergency Preparedness Project Conference
by Geoffrey H. Ball, Ph.D.

III. Small Power Producer Trend
by John H. Tait

IV. Renewable Energy for Emergency Communications
by Phil Chapman

V. City of Modesto Methane Recovery System
by Peggy Mensinger

VI. Small Power Production Activities in California Cities: An Overview
by Yvonne Hunter

VII. Alternative Fuel and Power for an EED
by Leigh Stamets

VIII. Petroleum Shortage Contingency Planning
Arturo Gandara

IX. Organizational Questions Facing an Energy Emergency District
by J. Randolph Stewart and William D. Davis

X. Energy Requirements for Emergency Scenarios
by Robyn Boyer Stewart

To encourage conference participants to become familiar with these materials and to come prepared to discuss their applicability to the formation and evaluation of the EED concept, it was decided to distribute the Bulletins on a regular basis prior to the conference. This allowed for the review and critique of the Bulletins and feedback of questions and concerns requested by Project staff. The Information Bulletins, glossaries, and rosters of Project Advisors and Associates constituted the Conference Workbook.

Based on the Advisors' written descriptions of a wide range of EED parameters (from their "problem perception exercise" described earlier), five initial models of the concept were developed for consideration at the conference. Five variations were provided for the following parameters: boundaries (geography), legal structure (enabling authority), authority (administrative and political considerations), and fiscal structure (financing). The functions of an EED remained constant across each of the models (i.e., to inventory locally and regionally available energy resources; identify priority energy users and critical facilities; coordinate funding and develop stockpiles, etc.). The following are summary descriptions of Model A through Model E. Following each description is an illustration which depicts the geographical configurations of the model in question (see Figure 2.2 through Figure 2.8).

ENERGY EMERGENCY DISTRICT - MODEL A

- **Boundaries**

  EED boundaries would be defined by California's 58 county (or emergency "operational areas") boundaries, with sub-district boundaries coinciding with California's 468 (currently; the number is expanding) Fire Protection Districts.

- **Functions**

  Prescribed -- see Mission Statement

- **Legal Structure**

  California Emergency Services Act, "Special Purpose District enabling provision.

- **Authority**

  Delegated local control (independent district), providing direct link to the Executive Branch of state government, extending to federal government (Subdistrict EED to county EED to OES to FEMA). Administration of EED Model A would rest with local disaster offices, aided and advised by the State OES. Existing administrative and mutual aid relationships would be used (see Model B).

- **Fiscal Structure**

  Funding would be forthcoming at the federal or state level to ensure a uniform allocation and distribution of financial resources, dedicated and not subject to local prioritization.

  As an independent district, this model EED could levy taxes, sell bonds, or charge for services.

NOTE: Parameters of this model conform to existing emergency organization boundary, legal, administrative, and fiscal structures. This model would add new functions.

Figure 2.2

ENERGY EMERGENCY DISTRICT

MODEL A

(Counties)

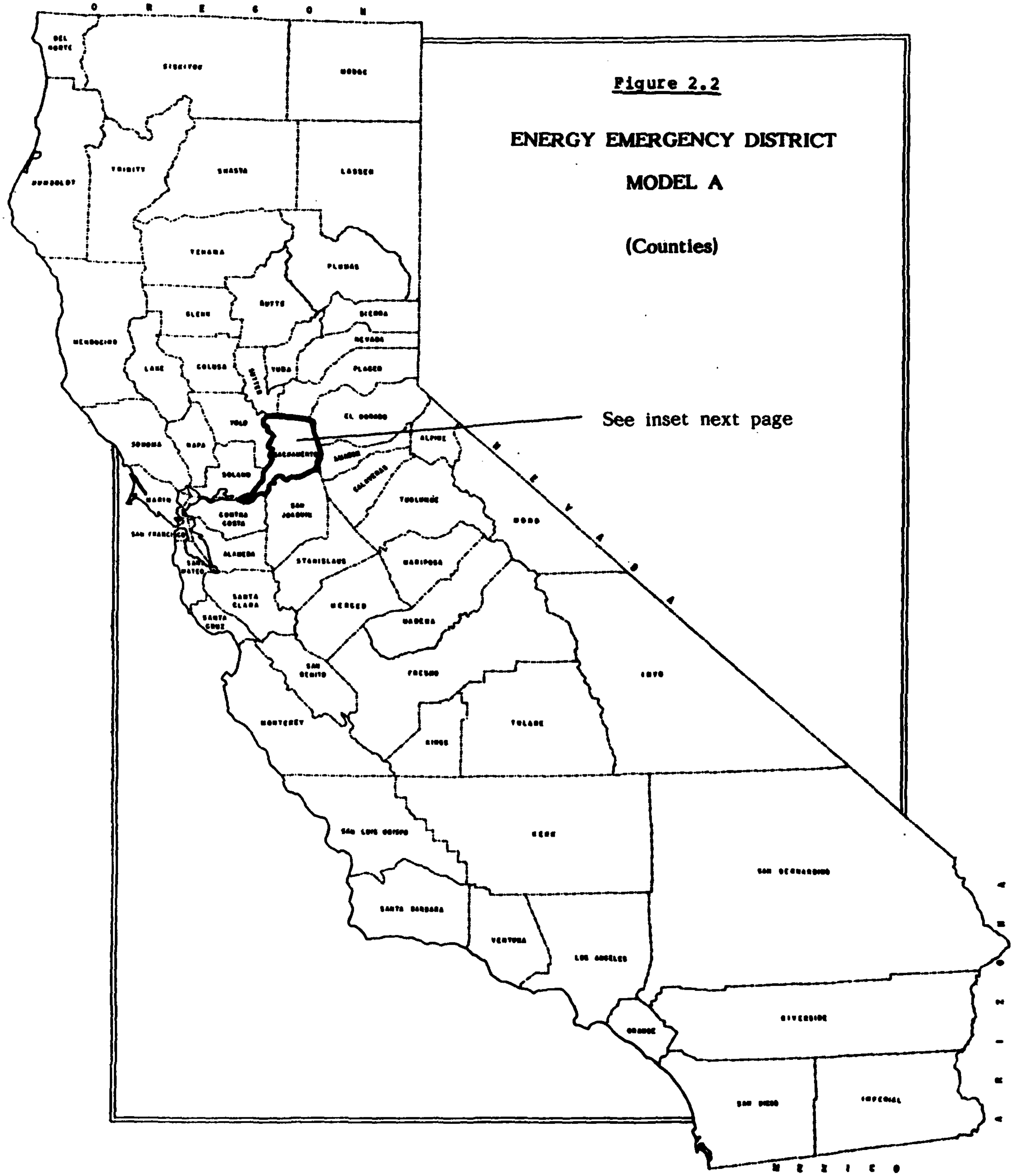
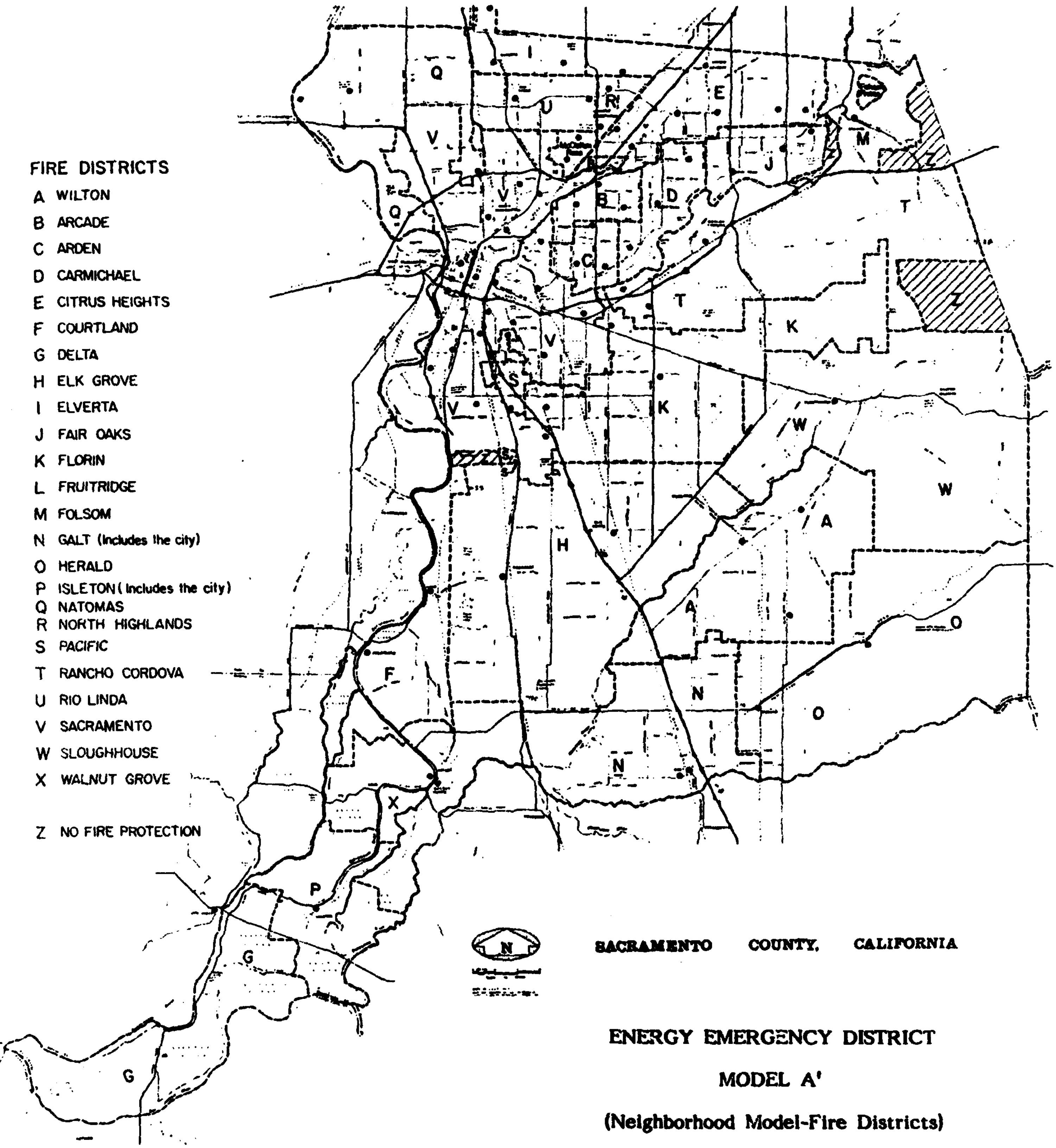


Figure 2.3



ENERGY EMERGENCY DISTRICT

MODEL A'

(Neighborhood Model-Fire Districts)

ENERGY EMERGENCY DISTRICT - MODEL B

- Boundaries

  EED boundaries would be defined by the Office of Emergency Services' six Mutual Aid Regions.*

- Functions

  Prescribed -- see Mission Statement

- Legal Structure

  California Emergency Services Act, "Special Purpose District" enabling provision.

- Authority

  EED would be integrated into existing planning and preparedness efforts of the State OES, with an emphasis on the Utilities Division for coordinating EED functions. This parameter would be the same as in Model A.

- Fiscal Structure

  Funding would be incorporated into the OES funding mechanism (Governor's Office budget), augmented by other related state and federal agencies and utilities (e.g., California Energy Commission, FEMA, Department of Energy, California Power Pool).

NOTE: Parameters of this model conform to existing emergency organization boundary, legal, administrative, and fiscal structures, and in many respects are the same as those of Model A. The boundaries of mutual aid regions would provide a larger unit of analysis than those described in Model A.

* California's Mutual Aid Program:

The foundation of California's disaster planning is a statewide system of mutual aid in which each local jurisdiction relies first on its own resources, then calls for assistance from its neighbors -- city to city, city to county, county to county, and finally through one of the regional offices of the Office of Emergency Services, to the state. A Master Mutual Aid Agreement has been adopted by most cities of California and by all 58 counties. This creates a formal structure within which each jurisdiction retains control of its own personnel and facilities that can give and receive help whenever it is needed. The state is signatory to this agreement and provides available resources to assist local jurisdictions in emergencies. The state is divided into six regions, with five regional offices staffed by the Office of Emergency Services to coordinate these activities. Through this mutual aid system the Governor's Office receives a constant flow of information from every geographic and organizational area of the State.

Figure 2.4

ENERGY EMERGENCY DISTRICT

MODEL B

(Mutual Aid Regions)

ENERGY EMERGENCY DISTRICT - MODEL C

- Boundaries

EED boundaries would be defined by public and private utility control areas (service territories) and by refinery regions used by the California Energy Commission in association with the Petroleum Industry Information Report Act (PIIRA).

- Functions

Prescribed -- see Mission Statement

- Legal Structure

None needed with this model.

- Authority

There would be dual authorities with this model. One would remain within each utility's control area, and emanate from the central dispatching facility for each area to their respective administrative districts or divisions to priority users. Coordination would be by the OES Utilities Division Chief.

The role of small power producers (Qualifying Facilities, or QFs) would be examined to get maximum benefit from them, and all parties (governmental, investor and public utility agencies, the military, etc.) would review the matter of their respective roles in dealing with power system emergencies brought about by disasters and the process of restoration of service.

The other authority would remain with the California Energy Commission with respect to their role in allocating petroleum resources when an energy emergency has been declared. Special Rule 6 of the Executive Order dated January 24, 1980 gives the Commission the authority to coordinate the distribution of intra-state petroleum stocks when a State of Emergency has been declared by the Governor.

- Fiscal Structure

Utilities would provide funding to perform EED functions, with possible augmentation by state and federal government agencies.

NOTE: This model conforms to California Energy Commission-, utility-, and OES-approved contingency plans and agreements.

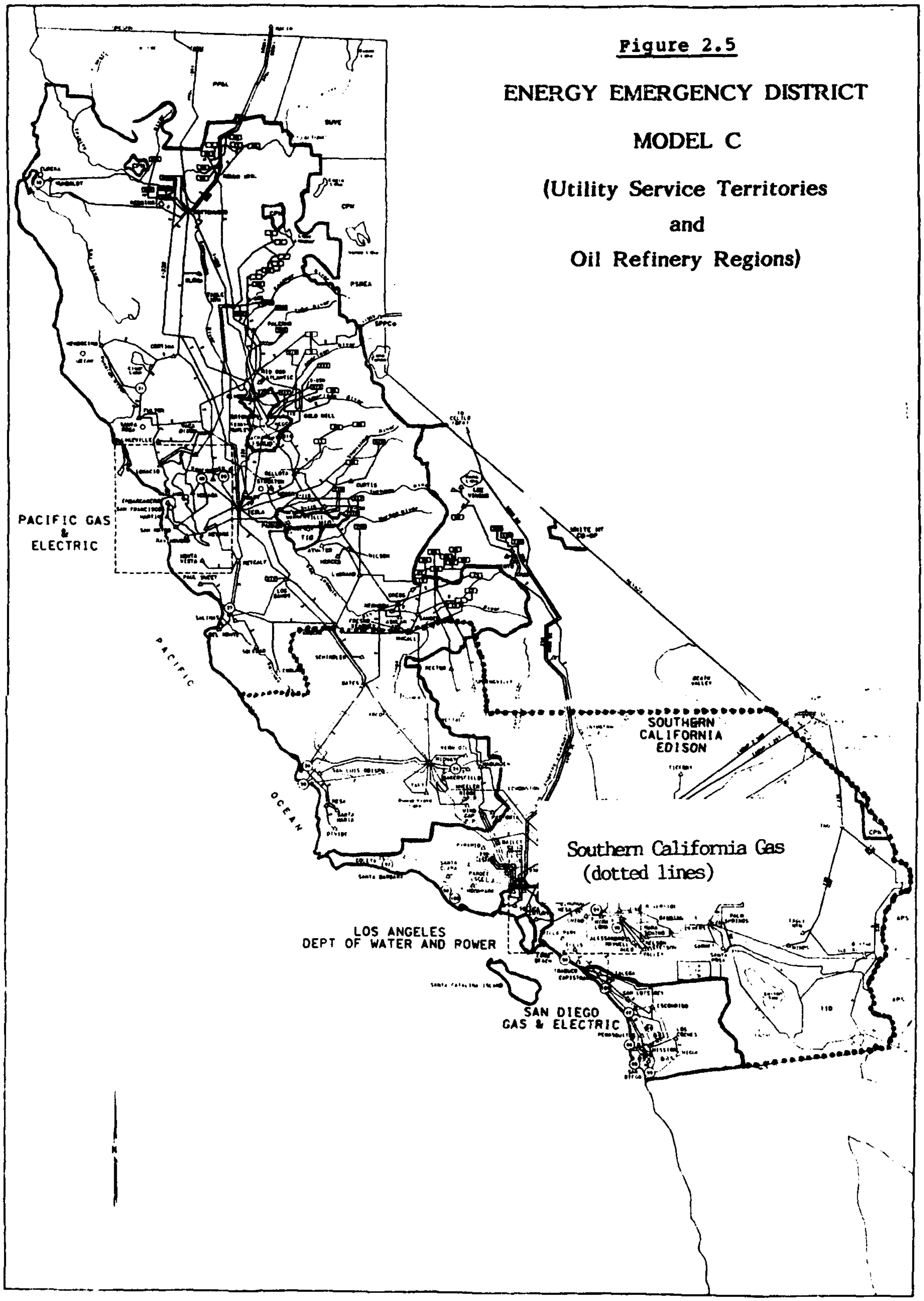


Figure 2.5

ENERGY EMERGENCY DISTRICT

MODEL C

(Utility Service Territories

and

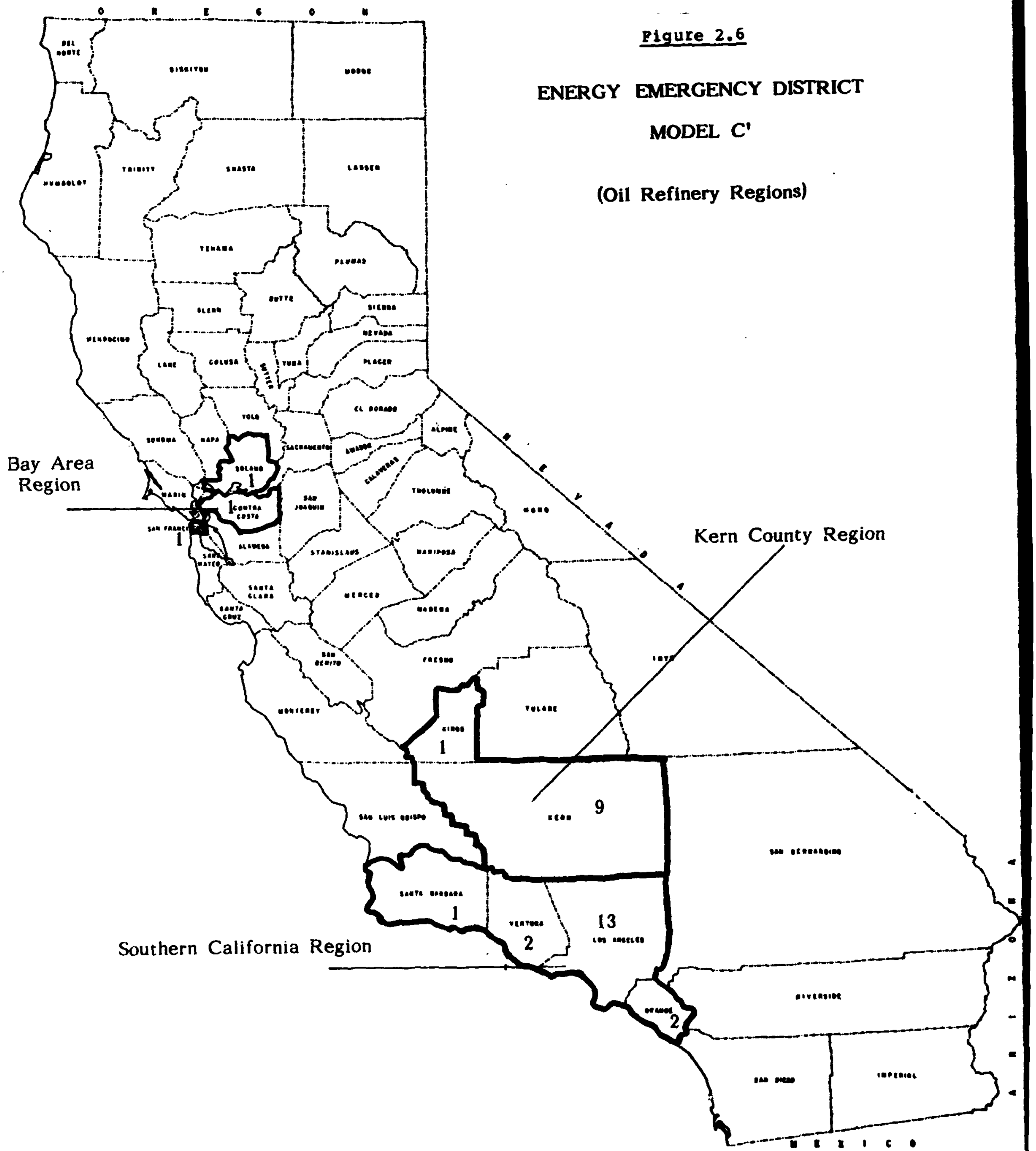
Oil Refinery Regions)

Figure 2.6

ENERGY EMERGENCY DISTRICT

MODEL C'

(Oil Refinery Regions)



NOTE: The numbers indicate the number of refineries in that county.

ENERGY EMERGENCY DISTRICT - MODEL D

- <u>Boundaries</u>

  EED boundaries would be defined by dividing California into five districts or distinct topographical regions (see map).

- <u>Functions</u>

  Prescribed -- see Mission Statement

- <u>Legal Structure</u>

  Under California Government Code, Section 8550, the Governor would activate an EED. The State OES would then take charge and support the EED as needed while providing the Governor with necessary updates on the emergency situation. OES would determine when the situation had abated to the point that a county could take control. The decision of OES for relinquishing control from the EED to the county would be final and not open to review.

- <u>Authority</u>

  The Model D EED would have far-reaching and wide-ranging powers, crossing many jurisdictions (including utilities'). An EED Director would be similar to a "military governor" in power when the Governor has ordered him to take command. The EED, its employees, agents, etc. would enjoy sovereign immunity for the duration of the disaster.

  The EED Director could requisition National Guard and Cal-Trans communication and transportation equipment and personnel as needed.

  Administration of each of the five area EEDs would be handled by a board of directors (thus this would be an independent district), composed of one member from the County Board of Supervisors of each member county; one representative of the sheriff's department of each member county; one representative of all utilities operating in the member counties; one representative for all fire departments and public hospitals. OES would choose an independent, full-time EED Director, to be in charge with final decision-making authority.

- <u>Fiscal Structure</u>

  California residents would pay a special tax (the percentage to be determined) on all utility bills to be used for funding EEDs. This would be subject to California Public Utilities Commission approval.

<u>NOTE</u>: This model <u>does not</u> conform to anything now in existence and would have to be created by Executive Order or by legislation.

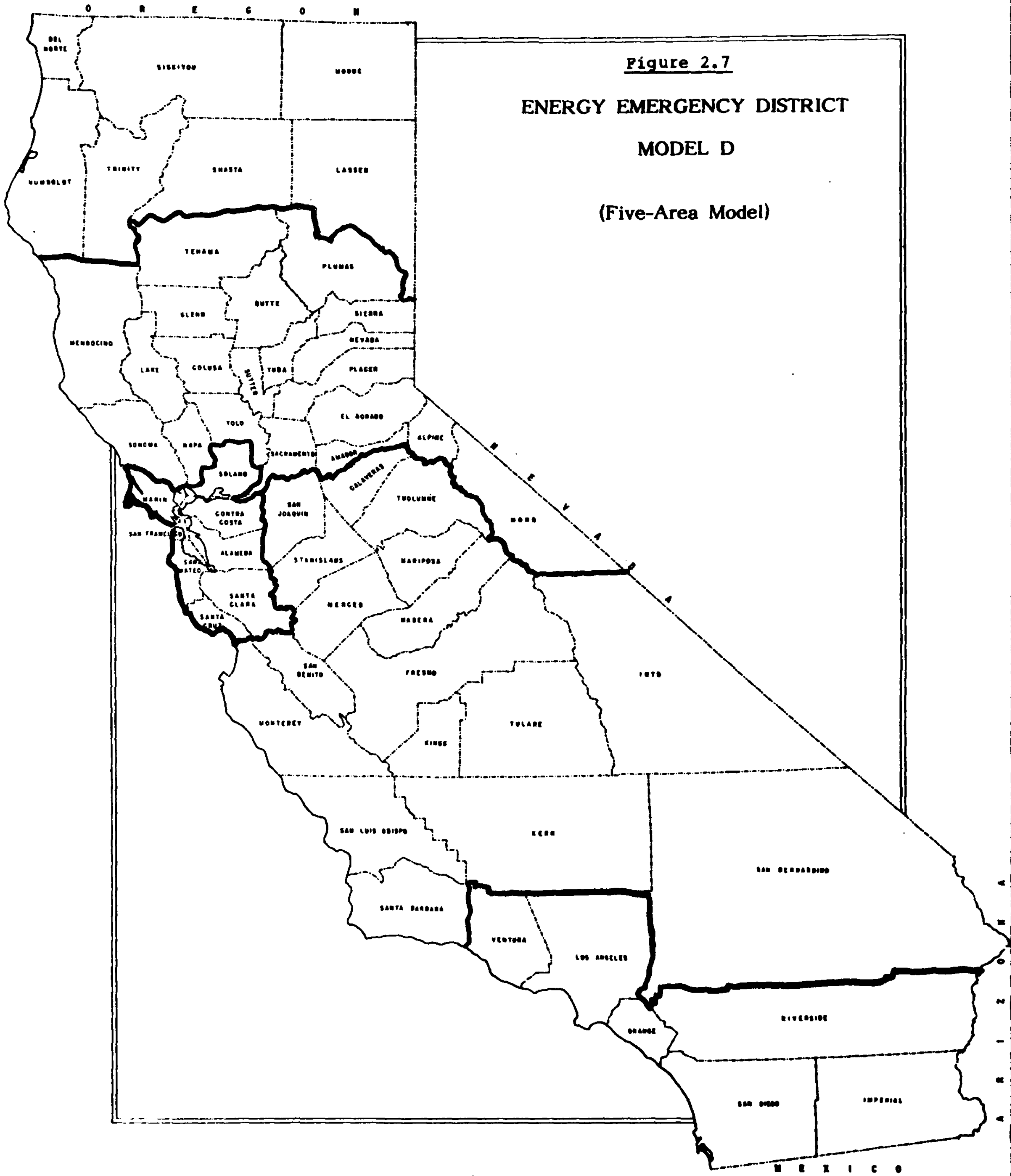


Figure 2.7

ENERGY EMERGENCY DISTRICT

MODEL D

(Five-Area Model)

ENERGY EMERGENCY DISTRICT - MODEL E

- Boundaries

  Defined by population, energy usage and critical facilities on a regional basis.

- Functions

  Prescribed -- see Mission Statement

- Legal Structure

  None needed with this model.

- Authority

  This model is the "triage" model. The assumption here is that in a disaster, the limited energy resources would go to the largest number. Larger metropolitan areas would have priority over rural areas. The decision as to who would receive the resources would be made by regional governmental bodies such as the Association of Bay Area Governments, the Southern California Association of Governments, or Councils of Government.

- Fiscal Structure

  Funding would be provided by state and federal augmentation to the COGs.

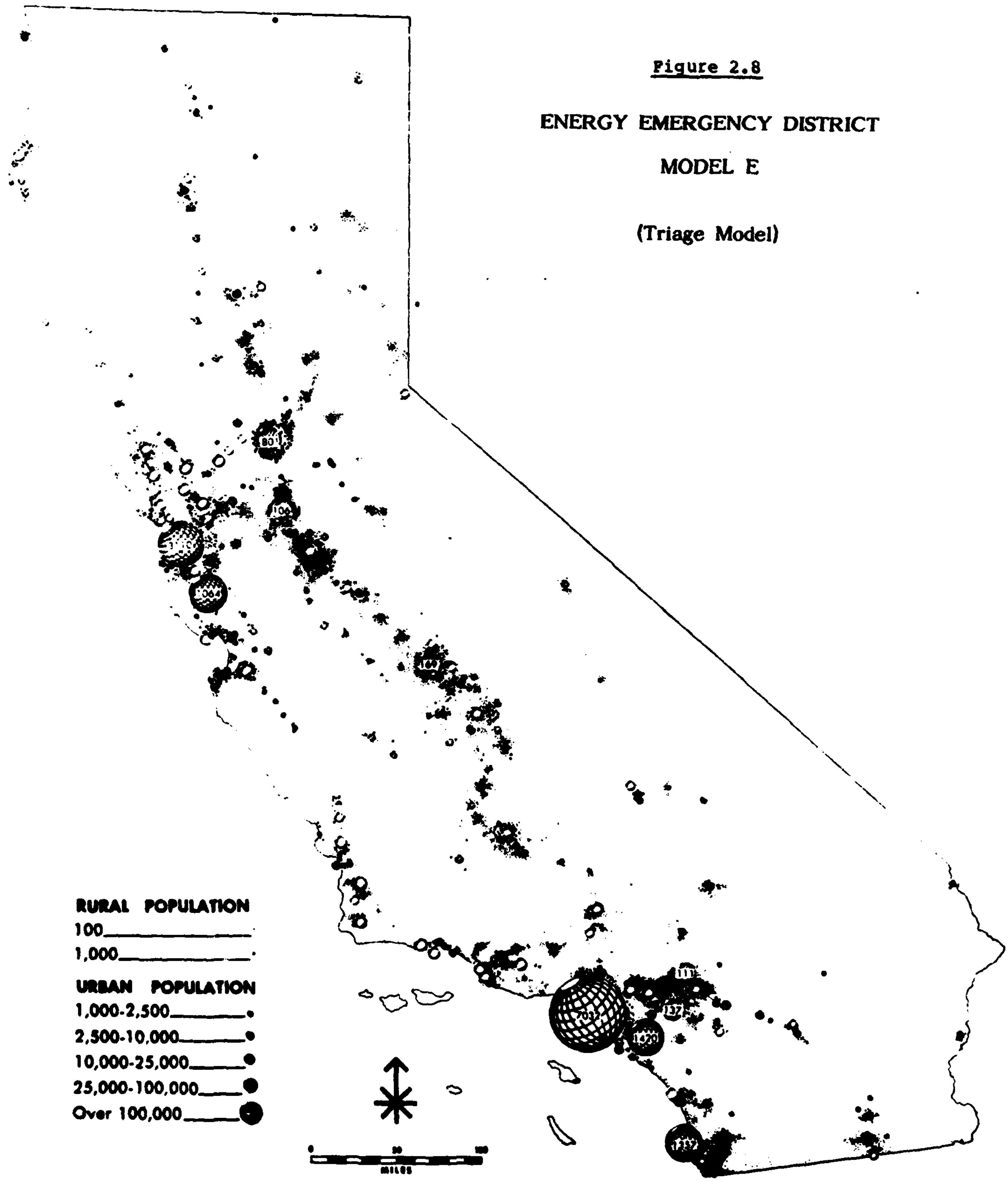
POPULATION DISTRIBUTION

Figure 2.8

ENERGY EMERGENCY DISTRICT

MODEL E

(Triage Model)



The final steps in Phase I entailed developing evaluation criteria to test (1) the feasibility of each of the EED models, and (2) the effectiveness of the Collaborative Problem Solving Process. With respect to the preliminary EED models (Models A through E), and any additional models developed at the conference, the following criteria were considered:

- Can this model perform the prescribed EED functions?
- Does this model enhance emergency response needs or capabilities, and if so, to what extent?
- Is this model manageable? Does it work; can it be kept going?
- Is this model implementable, economically, politically, legally?
- Are the fiscal, legal, and administrative structures of this model compatible with one another and are they feasible?
- Who benefits and who doesn't from this model?
- Is there conflict with existing services?
- Is this model cost-effective, i e., what are the benefits and what are the costs (in dollars, time, and effort) and do the costs outweigh the benefits?
- Is this model adaptable across the state and throughout the nation?
- Is this model applicable to other states, and if not, why not? (Where are the limitations?)
- Is this model socially and politically acceptable?

A formal evaluation was designed to employ a modified Delphi technique to evaluate the various models. This is a method in which the conference participants were asked to rate the models on a number of dimensions, using a written questionnaire, giving a score of 1 to 5 for each dimension. The

participants were then asked to rank the models from "best" to "worst."

The purpose of the Energy and Emergency Preparedness Project was "to explore an innovative concept, that of Energy Emergency Districts, by use of an innovative process, that of Collaborative Problem Solving." In using the CPS Process as a research methodology, several assumptions were operating. Among them:

- Collaborative problem solving contributes to the elicitation of better quality information from conference participants because:

  a. greater freedom, more encouragement, and more time is given to eliciting information rather than providing it;

  b. being an active participant is better than being passive;

  c. information overload is minimized;

  d. synergy operates (i.e., the total involvement of the group is greater than the sum of the individual parts);

  e. consensus is the goal.

- The outcomes of collaborative problem solving are more likely to be implemented (and implementable) because:

  a. the people who would do the implementing have had a say in it;

  b. even if their choice was not the choice, they are able to see how the second-best choice was determined;

  c. consensus assures minimizing of "blocks" (of the decision) because all have "bought in" to the degree that they can say, "I can live with this, even though it is not my first choice;"

  d. more time is given to planning the idea rather than selling the idea;

e. stakeholders do the planning first, rather than react later (this slows implementation).

The evaluation effort was designed to be administered over the two days of the conference proceedings. Day One's Questionnaire (see Appendix C), was a five-point, Likert-type scale, designed to assess the effectiveness of the Collaborative Problem Solving Process, and the effectiveness of the facilitators and recorders (Process Team) for each of the eight small group sessions as well as the General Sessions.

Day Two's Questionnaire (see Appendix D), was divided into three parts: The first part used a five-point, Likert-type scale to evaluate the EED models. The second part used the same instrument as Day One to evaluate the CPS Process and the Process Team. The third part asked participants to evaluate the conference, whether they thought it an appropriate way to research the EED concept, whether or not any sort of an EED should be developed or implemented (irrespective of the models in question), and to provide basic demographic data.

The next section provides the results of the conference proceedings as well as the evaluation results.

2.7 Results: Phase II

The Energy and Emergency Preparedness Project Conference was held in Sacramento, California on October 1-3, 1984. Eighty-two persons, representing a wide range of energy professionals, and emergency managers attended. Table 2.3 provides summary demographic data of the group.

The conference was designed according to principles of the Collaborative Problem Solving Process, in which the "accordion process agenda" design was employed.[8] This refers to the breaking of the large group (General Session) into smaller working groups (Breakout Groups), and their return to the General Session for further work and "report outs" of their work in small groups.

Table 2.3

CONFERENCE PARTICIPANT

DEMOGRAPHIC DATA

Expertise/Background

Small Power Producer	1
Local Emergency Response Provider	13
City/County Administrator	4
Private Sector Emergency Planner	3
Military Personnel	1
Federal Agency Representative	6
Regional Representative	2
Transit District Representative	1
Technical Energy Expert	1
Major Energy Provider (non-utility)	1
Local Elected Official	2
County Emergency Coordinator	19
Policy/Legal/Theory Expert	9
Utility Operations Manager	7
Financial Expert	2
State Agency Representative	5
Media/Public Info Officer	2
(No response)	1
	82

Sex

Males	69
Females	7
(No response)	6
TOTAL N =	82

Age

Range	28 - 71
$\bar{x}$	47.2
(No response)	5

Each of the eighty-two persons were pre-assigned to a small discussion group (Groups 1 through 8) based on their expertise or background. Attempts were made to ensure a balance of perspectives, and to include at least one Advisor or Alternate who could serve as a resource person in each of the eight small group sessions. The "Process Team" consisted of one facilitator and one recorder for each of the eight small groups; a Master Facilitator, and Process Manager, who were responsible for the overall design and implementation of the process; and a number of volunteer assistants who were responsible for logistical details. The Project Director was responsible for the overall management of the "content" (as opposed to the "process") of the conference, and served as a roving resource person. The Project Coordinator was responsible for the over-all management of the conference's logistics. Appendix E provides a list of the conferees and their affiliations, the project staff, and the process team.

A pre-conference reception was held on October 1, as a means of encouraging participants to meet informally and get to know one another. Day One (October 2) of the conference was designed as follows:

<u>Anticipated Outcomes for Tuesday, October 2, 1984</u> participants to:

- review, understand and agree to EED model evaluation criteria;
- review, understand, and agree to EED functions;
- review, understand nature and characteristics of each EED model (Models A through E);
- explore ways each model might carry out the different prescribed functions (from Project's Mission Statement);
- form ("flesh out"), test, improve EED models (each small group doing at least one model in depth);
- summarize key advantages/disadvantages of the models;

- develop any significant different model created by a small group;

- report out all small group findings to large group.

To accomplish these outcomes, the following agenda was devised:

Conference Agenda for Tuesday, October 2, 1984

LARGE GROUP
8:30 am — Conference Opening

-Project overview (mission, goals, etc.)

-Presentation of EED Models A - E

SMALL GROUP
10:30 am — Introductions, agenda review, roles clarification

11:00 am — Review of EED evaluation criteria

11:10 am — Review of EED functions

11:25 am — Review of EED models A - E:

-what is their general nature?
-what about each model would/would not work well in carrying out the proposed functions?

12:00 noon — Lunch

SMALL GROUP
1:30 pm — Each group to further develop/improve one of the EED models A - E:

-define and fill out model parameters in depth
-list concerns, unanswered questions
-list advantages/disadvantages of the assigned model

2:25 pm — Each group to make a choice:

-continue working on the group's assigned model
or
-define a new and different model, concept or idea that had developed from the group's interaction

3:35 pm — Prepare an outline of small group findings for presentation to the General Session

Conference Agenda for Tuesday, October 2, 1984 (continued)

LARGE GROUP
3:45 pm — Convene in General Session

Small group representatives to describe group findings ("Report outs")

Large group to vote (with electronic balloting system) on 3 "best" models for consideration on Day Two of conference

Large group to complete paper-and-pencil evaluations of Day One's process

Day One: Findings

At the end of Day One, each of the eight groups reported on their group's findings and described the model that they had chosen to develop. Generally, there was concern that not enough time had been allowed for the work at hand, and many participants expressed confusion as to how to define an EED and how a conceptual "district" might differ from the in-place energy production and delivery system. Another concern expressed was that of creating and imposing another new organization onto existing structures. Discussion of alternative energy technologies, initially proposed as an integral part of the EED concept, was pushed aside in favor of discussing the legal and political issues related to stockpiling energy resources, governmental commandeering of facilities, and the like. Key to and consistent with the groups' concerns was the fact that the first principle of the Collaborative Problem Solving Process had essentially been violated: there was not agreement on the problem (of energy vulnerability) and people resisted what they perceived as the imposition of the EED "solution."

Another finding from Day One's proceedings was the confirmation of the fact that despite organizational, in-place mechanisms for communication between energy providers and emergency managers, knowledge of one another's roles and responsibilities was limited. Much of the time was spent in small groups "educating" the respective camps to one another's activities.

Many groups bogged down in their discussion of the EED functions, arguing that the four functions were mutually incompatible, that is, it was unrealistic

(and infeasible) to expect the same entity/organization/EED to inventory energy resources, to identify priority users, to stockpile key components and fuels, and also to coordinate and allocate those resources. The EED function related to allocation suggested violation of the long-standing tradition in which the energy providers maintain control over their facilities and resources, but are guided by government as to where to allocate them (see Part I).

An enduring concern was that of nailing down the scope of the problem which might activate (or necessitate) an EED. Participants had been provided an open-ended series of emergency scenarios, ranging from a flood or major storm, to a disasterous earthquake (8.3 R), an electromagnetic pulse attack, or a nuclear war. Without a more solid definition of the scope of the problem, it was difficult, if not impossible to form elaborate models of the concept, let alone evalute them.

Each of the eight groups described the model that they had chosen to develop. Two groups had developed additional models, labeled Model F and Model G. Model F was generally distinguished from Models A-E by the fact that it used the entire state as the boundaries. Its primary purpose would be to help consolidate various contingency plans and to encourage energy self sufficiency. Model G was similar to Model B in its use of the six mutual aid regions as the boundaries. Emphasis was placed on using the Regional Managers to coordinate this EED model's functions, and on using existing structures. Another group had formed a model which was an amalgam of Models A,B, and C, labeled Model Z. The group as a whole then voted on each of the models (A-Z) as to which was considered the "best" for carrying out the four functions and for serving as a starting point in Day Two's deliberations. Table 2.4 provides the scores as a percentage of the total group for each of the models, based on an electronic balloting system.

Table 2.4

ENERGY EMERGENCY DISTRICT MODELS
"BEST" MODEL SCORES

"Which three models would provide the best starting point for further development tomorrow? Elements of the other models may be used in developing the three chosen models."

Model	Score
A	15%
B	30%
C	15%
D	12%
E	3%
F	43%
G	35%
Z	23%

The models receiving the three highest scores were chosen for consideration the next day (Models B, F, and G).

Day Two of the conference was re-designed to address a number of concerns that had been raised at the end of Day One's proceedings. The morning General Session was spent clarifying the scope of the problem an EED might address ("Energy not available from usual sources for priority needs for an extended period of time. . ."), and reminding the group that a District need not be a new organizational entity. Other forms of energy emergency management were allowable for consideration. The new, simplified design of Day Two's proceedings was as follows:

Anticipated Outcomes for Wednesday, October 3, 1984

Participants to:

- Refine Models B, F, and G
- Evaluate Models B, F, and G, using paper and pencil questionnaires
- Evaluate the Collaborative Problem Solving Process

To accomplish these outcomes, the following agenda was devised:

Conference Agenda for Wednesday, October 3, 1984

LARGE GROUP	
8:30 am	Review progress made Tuesday
	Review expectations for Wednesday:
	-continue development/improvement/testing cycle on chosen models
	-report on B,F, and G
SMALL GROUP	
9:30 am	Review EED functions:
	-subdivide functions -rank order functions -develop new functions, if necessary
SMALL GROUP	
10:00 am	Refine Models: How best to modify and develop each one to carry out the top ranked functions:
	-Work through by parameter -Start with top ranked function -Use evaluation criteria to develop further
12:00 noon	Lunch
SMALL GROUP	
1:30 pm	Evaluation discussion
2:15 pm	Complete evaluation questionnaires
GENERAL SESSION	
3:00 pm	Small group representatives to describe group findings ("Report outs")
3:35 pm	Next Steps:
	-FEMA/OES Research agenda -Building on what has been started -Additional ideas and suggestions from floor
3:50 pm	Acknowledgments
4:00 pm	Adjournment

Day Two: Findings

Three options surfaced from the two-day process, which the group believed would be worth considering. None of the three options would result in the establishment of an EED. It was the consensus that the formation of EEDs would not be beneficial. Instead, the enhancement of the existing systems with respect to communications and coordination would be more appropriate.

The options were described as Models B, F, and G. Although none of the models would serve as district models, they each shared several common characteristics, and in most instances were indistinguishable from one another. These characteristics could serve as a basic framework for the development of a management system (rather than a district) for cooperatively responding to an energy emergency. Those characteristics were:

- Boundaries

  Use the existing six Mutual Aid Regions for pre-planning and information exchange; actual disaster site = "boundary"; PROBLEM: Mutual Aid Regions and utility service territories do not necessarily coincide.

- Roles and Responsibilities

  State Government: The Governor/Office of Emergency Services serves as central planning, review, and coordination authority. State should establish (and clearly communicate) priorities, and review local plans against those criteria.

  County/Local Government: Should inventory off-grid energy resources (including Qualifying Facilities/alternative energy facilities); identify priority users. Locals should have authority to distribute off-grid emergency resources.

  Energy Providers: Should provide more information on their current response plans and procedures; should be more active as advisors to state and local emergency planning agencies.

<u>FEMA/DOE</u>: Should provide national leadership; coordinate interstate emergency response plans; provide funding to assist in financing energy emergency response planning and development of local energy self-sufficiency.

- <u>Legal Authority</u>

Use the California Emergency Services Act as the basis for authority to conduct inventories; amend CESA to factor in <u>energy resources</u>, <u>critical facilities</u>, <u>priority users</u> specifically.

- <u>Funding</u> Possible sources include:

Tax incentives for private sector

State or local taxes for stockpiling

Assessment districts

Federal/state grants

Utility services surcharge

NOTE: Group recognized that there is little political support for new taxes, and that additional utility surcharges would result in higher energy costs.

In addition to these general findings, were the results of the evaluation questionnaires. Of interest was the finding that, when asked, "Should <u>any</u> sort of an EED be developed or implemented?" forty-nine percent responded "yes" and forty-five percent responded "no" with six percent providing "no opinion." As a final test of whether or not the participants felt the conference itself was an appropriate method for "exploring" the EED concept, seventy-nine percent replied "yes," thirteen percent replied "no," and seven percent had no opinion. Table 2.5 gives comparative results to these questions, broken down by group.

Table 2.5

COMPARATIVE
RESULTS OF CONFERENCE EVALUATION
BY GROUP

Group	Conference Appropriate Yes	Conference Appropriate No	Conference Appropriate No Opinion	Any Sort of an EED Yes	Any Sort of an EED No	Any Sort of an EED No Opinion
1	3	3	0	1	5	0
2	11	0	2	8	4	1
3	12	1	0	5	7	1
4	11	0	2	6	5	2
5	5	3	1	6	2	1
6	9	0	1	7	3	0
7	7	1	0	5	3	0
8	7	3	0	2	8	0
Total	65	11	6	40	37	5
Percentage	79%	13%	7%	49%	45%	6%

Because of the change in Day Two's agenda, the results for the EED model evaluations are not methodologically sound. The intended approach would have been to administer the questionnaires in the General Session, after the various explications of Models B, F, and G. The assumption would have been then, that all were evaluating the same model at the same time. This was not the case, however, and the results pertaining to each model's usefulness, feasibility, social and political acceptability, benefits, etc., were ascertained group by group. It was not possible, as a result, to aggregate data pertaining to the "same" model. The detailed results of each group's evaluation of their chosen EED model are provided in Appendix F.

The same difficulty pertained to process evaluation questionnaires, although it was possible to aggregate scores for a number of key questions. In general, participants indicated that there was not enough time to discuss the

agenda topics; that the use of the "group memory" technique was useful; that the small group process was effective in enabling the group to ask the hard questions of the EED models; that it was helpful to them to talk to people from outside their own areas of expertise about the agenda topics; they agreed that involving the people who might be responsible for implementing or managing an EED (in its forumulation), increases the likelihood of its effective implementation; and there was a strong consensus that the Collaborative Problem Solving Process was effective. Detailed results for each of the eight groups, for Day One and Day Two are given in Appendix G.

2.8 Discussion/Conclusions

The EED Models:

The whole area of energy and emergency response planning is a highly complex one. Because of its complexity, any "solution" to the problem resulting from the Energy and Emergency Preparedness Project conference should be viewed strictly as a starting point, requiring additional input and discussions with emergency planners, other government agencies, and the private sector to "flesh out" the all-important details of any final approach. It was well substantiated that many in attendance felt that the time constraints imposed by the conference agenda precluded a thorough discussion of the details necessary for the complete development of any final model or models. Much of the time was spent on clarifying the problem, and "cross-education", not on generating alternative solutions.

Although forty-nine percent of the conference participants responded "yes" to the question, "In general, do you think <u>any</u> sort of an Energy Emergency District should be developed and implemented?" their answers were carefully qualified by their comments that followed (see Appendix H for General Comments on the EED models). Consistently, participants urged building on existing sytems, using either the state, or the mutual aid regions, as the appropriate <u>units of analysis</u> for performing the functions outlined in the EED concept. There was a clear consensus that a <u>need</u> existed to identify and inventory resources, to identify and inventory critical facilities, and to develop integrated, coordinated contingencies and plans for ensuring an adequate

supply of lifeline resources; even clearer was the shared concern that, "No district [be created] but a process to address the functions [be developed] without establishing a new structure."

A number of participants, including Advisors, expressed concern that the contribution of alternative energy technologies had been swept aside for lack of time.

> The essential role of individuals and neighborhoods in the event of a major catastrophe--and the role of alternative dispersed energy sources in this--was virtually ignored in this conference. Utilities and traditional, government units can't respond effectively when their energy, transportation, and communication systems fail. Response units to a catastrophe will be smaller, and their energy needs were barely addressed here. . . .Inadequate focus on contribution of alternate energy and dispersed resources.[9]

Although three "evaluated options" emerged from the two-day proceedings, there are negligible differences structurally between Models B, F, and G. The only distinction seems to be that Models B and G employ the use of existing Mutual Aid Regions for boundaries, while Model F uses the entire state as the unit for analysis (performing the functions). Rather than replicable, nationally applicable models of districts, the conferees developed a list of recommendations aimed primarily at the state emergency services organization and at the utilities:

> Central to this model [Model F] is the requirement for the Governor to provide a centralized review, approval and coordination of energy emergency contingency plans for the public utilities and petroleum industry at the state level of government. This includes the integration of energy emergency plans into the inclusive emergency planning and response requirements of the Governor's Office of Emergency Services.
>
> Collection, analysis, and dissemination of petroleum product availability should be that of the appropriate state agency--as specified by the Governor.
>
> The allocation of state petroleum set-aside shall be the exclusive responsibility of the state.
>
> The need for additional fuel shall be confirmed by county OES agencies and made known to the state.
>
> Alternative energy technologies/systems should be considered by private and public sector energy end-users as mitigation responses to energy disruptions.

OES should institute a training process which might include simulations programs in order to:

1. Inform the public and private sectors of the adopted state plans.

2. Identify component plan conflicts.

3. Encourage the private and public sectors to implement energy disruptions mitigation plans, procedures, and technologies.

Local OES contingency planning should continue to include an inventory of facilities, equipment and related support resources [related to energy].

Energy providers, state and local energy and emergency response agencies should coordinate their respective responsibilities to ensure policy and program response consistency.

It is imperative that FEMA continue to provide national leadership in ensuring comprehensive and consistent inter- and intrastate emergency response plans.[10]

In terms of meeting FEMA's stated requirements for the Project, the conference proceedings contributed in only very general ways. The conferees started with five distinct models developed by Project staff from submissions by the Advisory Board, and finished with essentially one. The Advisors had the advantage of having "worked through" the first four steps of the problem-solving process (from perception of the problem of energy vulnerability, to the alternative generation of solutions--preliminary models of the EED concept). They had also been given sufficient time to mentally explore the EED concept without pressure or constraints of a rigid agenda. As a result, their initial perceptions constitute a "think piece" in and of themselves. They are offered here as Appendix I, for consideration. Because the conference participants did not have the opportunity to go through the first four steps, they missed a critical link, and each had to assume their own problem definition. The result was to create a limiting effect on the quality of the partipants' contribution. These and other problems encountered in applying the Collaborative Problem Solving Process will be discussed next.

The Collaborative Problem Solving Process:

Based on the General Comments of the participants' evaluations of the conference (see Appendix J), the process was generally well-received. There seemed, however, to be a wide range of opinion as to whether or not the process, or the manner in which it had been applied (the design of the conference), was the best means for generating specific, evaluated models of the EED concept.

As mentioned earlier, the primary difficulty was that the first principle of collaborative problem solving was violated: "If you don't agree on the problem, you can't agree on the solution." There was not a consensus developed by the participants about the nature of the problem (the first four steps of problem solving), and as a result, they were reluctant to endorse the district concept:

> . . .the major problem facing the conference was that participants found it hard to accept that EEDs were but one alternative to the broader emergency/energy needs problem. There was a strong tendency during the first day to want to discuss/identify/evaluate alternatives to the broader question.[11]

Another difficulty stemmed from complications in applying the process to the research task at hand:

> . . .the success of the accordion process is influenced by two interrelated factors. They are (a) the task and (b) the character of the participant group. If the task is information or opinion generation, then a heterogeneous group of reasonably well-informed people (as you had) can be formed and supply a satisfactory product. If the task is problem solving, solutions, or strategy, then the more homogeneous the group, and the more intimately familiar they are with the problem, the better the product. The E-2-P-2 participant group was heterogeneous and not adequately briefed on specifics of the problem. Again, the quality of solutions generated by us is suspect: Did we really provide the best answers to such critical questions? Could a more homogeneous group (either more energy and utilities people, or more emergency services) have provided a better product?[12]

Since the goal of the project was to "problem solve," and to develop strategies (called EEDs), the heterogeneity of the groups may have worked against the goals. The discussions were limited by time and other factors:

> . . . this process is an excellent way of generating ideas and key issues. However, the hard questions need to be answered some other way. This collaborative process idea is a good brainstorming idea.[13]

The scope of the problem (to explore the feasibility of EEDs), was by nature extremely broad and the potential disasters and responses extremely varied. It is clear that participants would have benefitted from having the same complete disaster/emergency scenario, and then all working from it. This would have been more consistent with another principle of the collaborative process, that is, to have everyone in the group working "in the same phase at the same time."

Finally, it became apparent mid-way through the first day that the two groups (energy providers and emergency service coordinators) had specific information needs regarding each other's activities which were not fully anticipated prior to the conference.

Despite these difficulties, the conference did produce a number of benefits:

- The conferees constructed a roadmap, based on a consensus model, for developing a local emergency management system which would fulfill the functions of an EED;
- The conference underscored the need for the energy providers and the emergency services to more closely and routinely coordinate their respective activities;
- The conference identified specific information needs:

  --that local emergency services had a need to know what non-grid energy resources are available in the event of an emergency; and

  --that local emergency services had a need to know the nature and extent of the private sector's emergency planning currently in place;

- The conference revealed the fact that the utilities needed to do more to communicate to government agencies and to the public their mission and the extent of their emergency planning;

- The conference began the process of communication between the energy providers and emergency services necessary to create joint, locally-based emergency response management systems; and

- The conference identified key persons in the state who were interested and able to serve as advisors to the state and local agencies for establishing and refining an operational system to perform the EED functions.

In addition to opening the lines of communication, the conference helped to identify areas for further work, and helped point the way for new directions. In Part III, a summary proposal for applying the conference lessons is provided.

PART II: REFERENCES

1. W. Clark, et al., op. cit.

2. Ibid.

3. Geoffrey H. Ball. "Collaborative Problem Solving and the Energy and Emergency Preparedness Project Conference," Information Bulletin No. II, Energy and Emergency Preparedness Project, Sacramento, CA, September, 1984.

4. David Doyle and Michael Straus. How To Make Meetings Work. PBJ Books, Inc., New York, New York, 1976.

5. David Straus. "How To Manage a Large Task-Oriented Conference," Successful Meetings, October, 1979.

6. Ibid.

7. Geoffrey H. Ball, op. cit.

8. David Straus, op. cit.

9. See Appendix H, "General Comments, EED Models."

10. From the "group memory" of the General Session, Final Description of EED Models B, F, and G, Energy and Emergency Preparedness Project Conference, Sacramento, CA, October 3, 1984.

11. See Appendix J, "General Comments, Collaborative Problem Solving Process."

12. Robert L. Irwin, President, Basic Intergovernmental Services. Personal correspondence to Robyn Boyer Stewart, October 8, 1984.

13. Appendix J, op. cit.

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PART III: A PROPOSED PROGRAM

3.1 Introduction

Part III stems from the outcomes and the lessons learned at the Energy and Emergency Preparedness Project conference, from the discussion of existing organizations in Part I, and from interviews with energy providers and emergency managers to suggest variations on the EED concept, and to outline programmatic approaches to energy resource emergency preparedness. It is offered as an outline for further discussion and possible development, and attempts to build on the strengths of existing structures, as well as to incorporate innovative technologies and management concepts. NOTE: All references in the following outline to "energy resource inventories" pertain only to non-petroleum resources. In California, the California Energy Commission and petroleum industry currently maintain routine and "hot-line" emergency inventory information.

3.2 Moving from an EED to a Program

A. State Energy Resources Inventory for Coordinated Emergency Planning (SERICEP) Program*

1. Each state to be a "district" -- unit of analysis

2. State can be divided into smaller "sub-districts" along jurisdictional and/or technological boundaries for purposes of conducting resource inventories

3. Use information technology, multi-entity coordination concepts,[1] and cartographic technology for organizing a cooperative private/public venture called the SERICEP Program to conduct inventories:

*working title

a. a means of bridging energy providers and emergency services

b. a means of securing data not available through FEMA's IEMS process

c. SERICEP a data collection and management program

4. Use modified IEMS process and SERICEP Program to:

a. inventory and locate all modes and configurations of energy resources, their critical supply and maintenance requirements, and the personnel and organizations associated with them

b. identify and locate priority energy users and critical facilities, using the California Public Utilities Commission's priority categories as a starting point

5. The proprietary nature of energy providers' systems to be respected

6. All operational responsibilities (all actions carried out as a result of SERICEP data-based plans) to remain with energy providers

7. Inventories of energy resources, personnel, and organizations, and of critical facilities to be stratified to local, multi-jurisdictional, regional, state and federal levels

8. Stratified inventory and critical facility data to be provided to national/regional Emergency Energy Inventory District (EEID)

9. Possible applications of inventory and critical facility data include:

a. Use to interface and coordinate state and local emergency plans with energy providers' plans

b. Use to develop pre-incident contingencies for cooperative "islanding" of energy systems,[2] balancing system integrity needs with priority users' and critical facilities needs

c. Based on a variety of damage potential scenarios, i.e., earthquake impact on lifelines, use data to determine:

(1) local capabilities to meet local needs

(2) regional and multijurisdictional capabilities to meet unmet local needs and regional needs

(3) statewide capabilities to fill shortfalls at the local and regional levels

(4) multi-state capabilities[3]

B. National Emergency Energy Inventory Districts

1. Boundaries to be the nine NERC regions (excluding Canada) - each region a unit of analysis

2. To be activated only for national-level emergencies

3. National EEID and Regional EEID data management centers to be developed on the basis of the Middle Management Center concept[4]

4. EEID data centers to be staffed by EEPER operations personnel and appropriate government coordinators

5. EEID centers to be located in hardened and completely self-sufficient facilities

6. All operational responsibilities (all actions carried out as a result of EEID data-based decisions) to remain with energy providers

7. EEID activities to include:

   a. compiling, interfacing and managing energy resource data gathered and forwarded by each state

   b. interfacing and coordinating federal emergency plans with energy providers' plans

   c. developing pre-incident contingencies for cooperative "islanding" of systems, balancing energy system integrity needs with priority users' and critical facilities' needs

   d. identifying vulnerable geographic transmission areas; assessing overall reliability of present facilities; assessing the adequacy of spare parts and tooling; assessing alternative emergency repair strategies; and assessing mutual assistance arrangements.[5]

3.3 Summary

The SERICEP Program and the EEID concept are merely starting points for further analysis and discussion. They are attempts to build on the strengths and resources of existing organizations, to be used for compiling and managing energy resource data gathered through a modification of FEMA's Integrated Emergency Management System (see Section 1.3.1). For national-level emergencies, mobilization, or war, EEIDs computers would be activated and managed through Middle Management Centers. These centers would be staffed by Emergency Electric Power Executive Reservist (EEPER) operations personnel and appropriate government coordinators. The centers would be housed in hardened facilities and dispersed strategically throughout the nine NERC regions of the United States.

Consonant with the IEMS procedures, each state would be responsible for assessing its energy resource capabilities, shortfalls, and vulnerabilities with respect to specific hazard analyses. This state-level effort, SERICEP, would require the support and cooperation of all energy providers within the state and use concepts derived from the FIRESCOPE Program,[6] as well as innovative management principles.[7]

PART III: REFERENCES

1. "Multiagency Coordination System (MACS): Goals, Functions, and Requirements." Statement of the FIRESCOPE Board of Directors, Los Angeles, CA, March 14, 1980.

2. Frank J. Hahn, Chief, Energy Division, California Department of Water Resources. Personal correspondence to Robyn Boyer Stewart, June 28, 1984 (see Appendix I).

3. "Capabilities" are defined in terms of energy type, delivery time from zero hour, amounts and duration of delivery.

4. Robert A. Harker and Allen E. Wilmore, op cit.

5. J.D. Eckman, Chairman, California Power Pool Emergency Preparedness Task Force, op. cit.

6. Robert L. Irwin, "FIRESCOPE" (Firefighting Resources of Southern California Organized for Potential Emergencies), Federal Emergency Magazine, Fall, 1981.

7. Thomas J. Peters and Robert H. Waterman, Jr. In Search of Excellence: Lessons from America's Best-Run Companies. Harper & Row, New York, N.Y., 1982.

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PART IV: OPPORTUNITIES FOR FURTHER RESEARCH

This report has tried to acknowledge the many efforts by a number of private and public institutions to secure energy resources in times of crisis. It has described efforts to research and explore an innovative concept, that of Energy Emergency Districts, using an innovative method, that of the Collaborative Problem Solving Process. This report has offered suggestions for inventorying, interfacing, and improving emergency energy resource management. Care should be taken to ensure a balance between the cost of collection and the perceived benefits of any new data reporting system. Full advantage should also be taken of existing reporting systems, with the objective of maximizing the timeliness and usefulness of any data collected prior to or during an emergency. By taking stock of the nation's energy resources, from the community to the federal level, by using information technology and sound management tools to identify actual or potential deficiences, and by moving with deliberation to reconcile those shortfalls, those resources can best be used when and where they are needed in an emergency.

Part IV outlines some research strategies for implementing the SERICEP and EEID concepts. These suggestions stem from the lessons learned by the Energy and Emergency Preparedness Project. The opportunities include:

1. Modify the IEMS process to include a special questionnaire (check list) for inventorying all modes and configurations of energy resources, their critical supply and maintenance requirements, and the personnel and organizations associated with them.
2. Using the Southern California Earthquake Preparedness Project five-county planning area as a unit of analysis, develop prototype approaches to conduct inventories and to determine critical facilities and priority users (use the same scenario and all work from it).
3. Conduct research on grid-independent applications of alternative energy technologies for use as stand-by emergency capability.

4. Survey all states' emergency services operations to determine the nature and extent of states' organizational relationship with energy providers.

   a. To what extent are utilities' operations in a state coordinated with (1) each other, (2) state governments, and (3) with local jurisdictions?

   b. What are states doing about energy system vulnerability within both the private and public sectors?

   c. What is the relationship between states' emergency services organizations and states' energy regulatory bodies?

   d. Is energy emergency preparedness a priority? How is this priority operationalized?

   e. What are examples of good models to follow?

5. Use focus groups of experts to develop consensus on the SERICEP Program. Use the collaborative process to implement the concept on a state-by-state basis. Learn from each iteration what works and what doesn't; develop prototype implementation strategies.

6. Use focus groups of experts to explore the consensus possibilities for the EEID concept. Evaluate the feasibility of implementing the concept on a regional basis through cooperative efforts with the National Electric Reliability Council and the Emergency Electric Power Executive Reserve Program.

BIBLIOGRAPHY

BIBLIOGRAPHY

Aspen Institute for Humanistic Studies. Decentralized Electricity and Cogeneration Options: Summary Report. Second Annual Energy R&D Priorities Workshop, Aspen, CO, July 13-17, 1979.

"Backup for Computer's Power Ensures It Won't Miss a Beat," Electrical World, January 1981, p. 118.

Ball, Geoffrey, H. "Collaborative Problem Solving and the Energy and Emergency Preparedness Project Conference," Information Bulletin No. II, Energy and Emergency Preparedness Project, Sacramento, CA, September, 1984.

Bass, Gail. Actions Against Nonnuclear Energy Facilities: September 1981-September 1982. Rand Corporation, Santa Monica, CA, April 1983.

Bass, Gail, Brian Jenkins, and Konrad Kellen. "The Appeal of Nuclear Crimes to the Spectrum of Potential Adversaries." Rand Corporation, Santa Monica, CA, RAND/R-2803-SL, March 1982.

Bass, Gail, et al. Motivations and Possible Actions of Potential Criminal Adversaries of U.S. Nuclear Programs. Rand Corporation, Santa Monica, CA, February 1980.

Bass, Gail and Brian M. Jenkins. A Review of Recent Trends in International Terrorism and Nuclear Incidents Abroad. Rand Corporation, Santa Monica, CA, 1983.

Batt, Robert. "Off-site Backup Spreading," Computerworld, March 5, 1984, p. 87.

Baughman, M.L., P.A. Malin, and S. Panjavan. Reliability of Electricity Supply During Oil Import Interruptions. Southwest Energy Associates, Inc., Austin, TX, July 1982.

Bernstein, Richard A. "A Contingency Plan for Recovering From a Disaster," Mid-Continent Banker, December 1983, pp. 12-15.

CSIS Science and Technology Committee. America's Hidden Vulnerabilities: Crisis Management in a Society of Networks. A Report of the Panel on Crisis Management, R. James Woolsey, Chairman and Robert H. Kupperman, Co-Chairman. The Center for Strategic and International Studies, Georgetown University, Washington, D.C., October 1984.

California Energy Commission. California Energy Shortage Contingency Plan. Sacramento, CA, P400-83-039, December 1983.

California Energy Commission. California Energy Shortage Contingency Plan, Part I: Overview of Circumstances Affecting the Design of a California Contingency Plan. Staff Draft prepared by Stephen Lewis, Special Advisor to the Energy Contingency Planning Committee, Sacramento, CA, January 1983.

California Energy Commission. California Energy Shortage Contingency Plan, Part II: Energy Shortage Management Strategies. Staff Draft prepared by Stephen Lewis, Special Advisor to the Energy Contingency Planning Committee, Sacramento, CA, January 1983.

California Energy Commission. California Energy Shortage Contingency Plan, Part III: Executive Summary of the Operational Elements of California's Energy Shortage Contingency Plan. Staff Draft prepared for the Energy Contingency Planning Committee by technical staff: B.B. Blevins, Bill Tippets, and Dennis Fukumoto, of the Liquid Fuels Conservation and Contingency Planning Office and Conservation Division, Sacramento, CA, January 1983.

California Energy Commission. California Energy Shortage Contingency Plan, Appendix A: Energy Emergency Management Plan. Staff Draft prepared for the Energy Contingency Planning Committee by B.B. Blevins, Liquid Fuels Conservation and Contingency Planning Office, Sacramento, CA, January 1983.

California Energy Commission. California Energy Shortage Contingency Plan, Appendix B: California Energy Emergency Information Plan. Staff Draft prepared for the Energy Contingency Planning Committee by Bill Tippets, Liquid Fuels Conservation and Contingency Planning Office, Sacramento, CA, January 1983.

California Energy Commission. California Energy Shortage Contingency Plan, Appendix C: Emergency Reductions In Energy Demand. Staff Draft prepared for the Energy Contingency Planning Committee by B.B. Blevins, Liquid Fuels Conservation and Contingency Planning Office, Sacramento, CA, January 1983.

California Energy Commission. California Energy Shortage Contingency Plan, Appendix D: California Fuel Set-Aside Programs. Staff Draft prepared for the Energy Contingency Planning Committee by Bill Tippets, Liquid Fuels Conservation and Contingency Planning Office, Sacramento, CA, January 1983.

California Energy Commission. California Energy Shortage Contingency Plan, Appendix E: Distribution of Federal Funds During an Oil Supply Emergency. Staff Draft prepared for the Energy Contingency Planning Committee by Dennis Fukumoto, Liquid Fuels Conservation and Contingency Planning Office, Sacramento, CA, January 1983.

California, State of, Department of Water Resources. "State Water Project Emergency Plan Policy Statement." Sacramento, CA, April 9, 1969.

California, State of, Disaster Office. Emergency Resources Management Plan. Sacramento, CA, January 9, 1968.

California, State of, Legislature. "California Emergency Services Act," Chapter 7 of Division 1 of Title 2 of the Government Code (Statutes of 1970, Chapter 1454), as amended in the Regular Session, Sacramento, CA, 1981-82.

California, State of, Legislature, Joint Legislative Audit Committee. Special Districts: Opportunities for Benefits Through Jurisdictional Changes. Report to the Legislature by the Office of the Auditor General, #P-915, Sacramento, CA, February 1, 1980.

California, State of, Office of Emergency Services. California Earthquake Response Plan, Southern San Andreas Fault (Draft). Sacramento, CA, July 1983.

California, State of, Office of Emergency Services. Disaster Assistance Procedural Manual. Sacramento, CA, November 1977.

California, State of, Office of Emergency Services. Disaster Preparedness for California Utilities. Utilities Division, Sacramento, CA, May 1983.

California, State of, Office of Emergency Services. State of California Emergency Plan. Sacramento, CA, August 1975, Revised 1984.

California, State of, Office of Emergency Services. Utilities Emergency Plan. Sacramento, CA, February 1, 1978.

California, State of, Office of Emergency Services, Fire and Rescue Division. Fire Service Mutual Aid Resources Inventory Form F-5, Revised January, 1984.

California, State of, Office of Emergency Services, Fire and Rescue Division. Operations Bulletin No. 31: Instructions for Compiling Fire Service Mutual Aid Resources Inventory (Form F-5). Sacramento, CA, Revised January, 1984.

Chapman, Phil. "Renewable Energy for Emergency Communications," Information Bulletin No. IV, Energy and Emergency Preparedness Project, Sacramento, CA, September, 1984.

Center for Renewable Resources. Putting Renewable Energy to Work in Cities. Washington, D.C., June 1982.

Clark, W., et al. Energy, Vulnerability and War -- Dispersed, Decentralized and Renewable Energy Sources: Alternatives to National Vulnerability and War. Federal Emergency Management Agency, DCPA 01-79-C-0320, January 1981.

Clark, Wilson and Jake Page. Energy, Vulnerability, and War: Alternatives for America. W.W. Norton, New York, NY, 1981.

Commins, Kevin. "Computer Disaster Firms Grow," Journal of Commerce, January 19, 1984, p. 1A.

Commonwealth Associates Inc. Analysis of Storm Related Outages and Restoration Measures -- Washington, D.C. Metropolitan Area. Prepared for U.S. Department of Energy, Assistant Secretary for Environmental Protection, Safety and Emergency Preparedness, Office of Energy Emergency Operations, Washington, D.C., DOE/RG/06674-T2 (NTIS), December 1981.

Commonwealth Associates Inc. Investigation into Outages of Electric Power Supply as the Result of Ice Storms. Prepared for U.S. Department of Energy, Economic Regulatory Administration, Division of Power Supply and Reliability, Washington, D.C., DOE/RG/06674-T1 (NTIS), September 1979.

Cory, Ken. Financial Transactions Concerning Special Districts of California: Annual Report 1979-1980. State Controller's Office, State of California, Sacramento, CA 1981.

Council on Intergovernmental Relations and Office of Planning and Research. Substate Districting in California: An Update. State of California, Sacramento, CA, September 1974.

Davis, James F., et al. Earthquake Planning Scenario for a Magnitude 8.3 Earthquake on the San Andreas Fault in the San Francisco Bay Area. State of California, Department of Conservation, Division of Mines and Geology, Sacramento, CA, 1982.

Davis, James F., et al. Earthquake Planning Scenario for a Magnitude 8.3 Earthquake on the San Andreas Fault in Southern California. State of California, Department of Conservation, Division of Mines and Geology, Sacramento, CA, 1982.

deLeon, Peter, Brian Jenkins, Konrad Kellen, Joseph Krofcheck. Attributes of Potential Criminal Adversaries of U.S. Nuclear Programs. A report prepared for Sandia Laboratories, The Rand Corporation, Santa Monica, CA, R-2225-SL, February 1978.

DeMarr, Susan C. "Statement of the Chamber of Commerce of the United States on Energy Emergency Preparedness," for submission to the Subcommittee on Fossil and Synthetic Fuels of the House Energy and Commerce Committee, August 30, 1984.

Doyle, Michael, and David Straus. How to Make Meetings Work. PBJ Books, Inc., New York, NY, 1976.

Earle, M.M., T.W. Fletcher, E.C. Harvey. Multijurisdictional Responses to Urban and Regional Disasters. SRI International, Menlo Park, CA, October 1980.

East Bay Municipal Utility District. Disaster Operations Plan. C.B. Adelmann, Chairman, Disaster Committee, Oakland, CA, Revised June 1967.

Ebinger, Charles K. The Critical Link: Energy and National Security in the 1980s (Revised). The Center for Strategic and International Studies, Georgetown University, Washington, D.C., 1982.

Eckman, J. D., Chairman, California Power Pool Emergency Preparedness Task Force. Minutes of Emergency Preparedness Task Force Meeting, San Diego, CA, September 13, 1984.

Edison Electric Institute. Electricity. The Power of Choice, 1983-84 Annual Report, Washington, D.C., 1984.

Electric Power Research Institute (EPRI). 1984-1988 Research & Development Program Plan. Prepared by EPRI Inc., Planning and Evaluation Division, Palo Alto, CA, P-3404-SR, January 1984.

Electric Research & Management, Inc. EMP Analysis. Electric Power Research Institute, Palo Alto, CA, EPRI EL-3172, July 1983.

Federal Emergency Management Agency. "Integrated Emergency Management System (IEMS)." IEMS Steering Committee, Washington, D.C., September 1984.

Freiwald, D.A., M.E. Berger, and J.F. Roach. DOD Energy Vulnerabilities. Los Alamos National Laboratory, Report No. LA-9485-MS, 1982.

Gallant, John. "March Storms Test Data Center Disaster Recovery Plans," Computerworld, April 9, 1984, p. 14.

Gandara, Arturo. "Petroleum Shortage Contingency Planning," Information Bulletin No. VIII, Energy and Emergency Preparedness Project, Sacramento, CA, September, 1984.

Harker, Robert A., and Charles C. Coleman. Applications of Simulation Training Exercises to Crisis Relocation Planning. Center for Planning and Research, Palo Alto, CA, DCPA-01-74-C-0313, December 1975.

Harker, Robert A., and Allen E. Wilmore. Emergency Evacuation Management Requirements and Concepts. Federal Emergency Management Agency, Washington, D.C., DCPA-01-79-C-0253, May 1981.

Hawkins, Robert B., Jr. Self Government by District: Myth and Reality. Hoover Institution Press, Stanford University, Stanford, CA, 1976.

Head, J. T., Chairman, California Power Pool, Board of Control. Personal correspondence to G. P. Gaebe, Chairman, California Power Pool, Engineering & Operating Committee, November 16, 1983.

Hiltz, Star Roxanne, and Murray Turoff. The Network Nation. Addison-Wesley, Reading, MA, 1978.

Hinson, N. B., Chairman, Pacific Southwest Power Interchange Committee. Personal correspondence to James B. Black, President, Pacific Gas & Electric Company, October 18, 1943.

Hodel, Don, U.S. Secretary of Energy. Excerpts from "Meeting America's Energy Needs Through the 1990's," presented before the Great Lakes Conference of Public Utilities Commissioners, July 9, 1984.

Houston Lighting & Power Company. The Alicia Story, How Houston Lighting & Power Company Responded to Hurricane Alicia, Houston, TX, August 1983.

Hunter, Yvonne. "Small Power Production Activities in California Cities: An Overview," Information Bulletin No. VI, Energy and Emergency Preparedness Project, September, 1984.

Institute for Local Self Government. Guidelines for Local Contingency Plans for Energy Shortages. In conjunction with the California Energy Commission and with assistance from the County Supervisors Association of California and the California League of Cities, Sacramento, CA, March 30, 1981.

Institute for Local Self Government. Special Districts or Special Dynasties? Democracy Diminished. Berkeley, CA, May 1970.

Irwin, Robert L. "FIRESCOPE," Federal Emergency Magazine, Fall 1981, pp. 6-7.

Irwin, Robert L. President, Basic Intergovernmental Services. Personal correspondence to Robyn Boyer Stewart, October 8, 1984.

Johnson, Walter T., Jr. "Maintaining Preparedness for Large Scale Emergencies," Paper presented to the Operating Section, American Gas Association Distribution Conference, Denver, CO, May 22-24, 1978.

Kaprielian, Elmer, Vice President, Electric Operations, Pacific Gas and Electric Company. Testimony regarding California utilities' responses to the February 29, 1984 System-wide Disturbance, California Senate Public Utilities Committee, Sacramento, CA, March 5, 1984.

Kast, Fremont E., and James E. Rosenzweig. Organization and Management: A Systems and Contingency Approach. McGraw-Hill Series in Management, McGraw-Hill Book Company, 1979.

Kerr, James W. "Military Support of Civil Authority, "Military Review, July 1970.

Kupperman, Robert H. Technological Advances and Consequent Dangers: Growing Threats to Civilization. Significant Issues Series, Vol. 6, No. 1. Center for Strategic and International Studies, Washington, D.C., 1984.

Kupperman, Robert H. "Vulnerable America." in Nuclear Arms: Ethics, Strategy, Politics. Edited by R. James Woolsey, pp. 193-207. San Francisco: Institute for Contemporary Studies, 1984.

Kupperman, Robert H., Wilcox, Richard H., and Smith, Harvey. "Crisis Management: Some Opportunities," Science, February 7, 1975, pp. 404-410.

Labadie, John R. Electric Power Emergency Handbook. U.S. Department of Energy, Economic Regulatory Administration, Office of Utilities Systems, Emergency Electric Power Administration, Washington, D.C., DOE/RC/10327-01, September 1980.

Labadie, John R. "Management of Emergency Operations at the Community Level," Disaster Management Journal, New Delhi, India, October-December 1983, pp. 211-219.

Labadie, John R. U.S. Industry Computer Dependency (Draft). Prepared by IRT Corporation for Defense Nuclear Agency, Federal Emergency Management Agency, Washington, D.C., 1984.

Lawrence, Paul R., and Jay W. Lorsch. Organization and Environment: Managing Differentiation and Integration. Division of Research, Graduate School of Business Administration, Harvard University, Boston, MA, 1967.

Lovins, Amory B., and L. Hunter Lovins. Energy Policies for Resilience and National Security. Final Report to the Council on Environmental Quality for the Federal Emergency Management Agency, DCPA-01-79-C-0317, November 13, 1981.

Lovins, Amory B., and L. Hunter Lovins. Brittle Power: Energy Strategy for National Security. Brick House Publishing Company, Andover, MA, 1982.

Mathtech, Inc. Environmental and Socio-Economic Consequences of a Shortage in Installed Generating Capacity. Princeton, NJ, June 1982.

Meislin, Richard J. "Computers Lose Data Capability in Power Failure," New York Times, September 10, 1981.

Mensinger, Peggy. "City of Modesto Methane Recover System," Information Bulletin No. V, Energy and Emergency Preparedness Project, Sacramento, CA, September, 1984.

Mink, Oscar G., James M. Schultz, Barbara P. Mink. Developing & Managing Open Organizations: A Model and Methods for Maximizing Organizational Potential. Learning Concepts, Austin, TX, June 1979.

Morse, L.F. Renewable Energy for the Future: Local Government Options for Promoting Development of Renewable Energy Resources. Association of Bay Area Governments, Berkeley, CA, October 1981.

Mosbaek, E.J. Power Shortage Costs: Estimates and Applications, Final Report. Jack Faucett Associates, Inc., Chevy Chase, MD, December 1981.

Mullen, Robert K. Potential Saboteurs to DOE Programs: Attributes and Inferences, Final Report. Advanced Technology Associates, Inc., Dublin, CA, ATAR 1014.80, September 1980.

"Multiagency Coordination System (MACS) Goals, Functions, and Requirements," Statement of the FIRESCOPE Board of Directors, March 14, 1980.

Myers, William W. Iron Men and Copper Wires: A Centennial History of the Southern California Edison Company, Trans-Anglo Books, Glendale, CA, 1984.

North American Electric Reliability Council (NERC). Annual Report 83. Richard O. Newman, Chairman, Princeton, NJ, 1984.

North American Electric Reliability Council. 14th Annual Review of Overall Reliability & Adequacy of Bulk Power Supply in the Electric Utility Systems of North America -- 1984. Interregional Review Subcommittee, Princeton, NJ, 1984.

Pacific Gas and Electric Company. Gas Operations Emergency Plan. San Francisco, CA, October 1979.

Pacific Gas and Electric Company. "An Interview with Chairman Frederick W. Mielke, Jr.," by Louis Rukeyser, San Francisco, CA, December 14, 1983.

Pacific Gas and Electric Company. 1983 Annual Report. San Francisco, CA, February 15, 1984.

Pacific Gas and Electric Company, San Diego Gas and Electric Company, Southern California Gas Company, Southern Counties Gas Company of California. Mutual Assistance Agreement. March 15, 1965.

Pacific Lighting Corporation. 1983 Annual Report. Los Angeles, CA, February 1, 1984.

Peters, Thomas J., and Robert H. Waterman, Jr. In Search of Excellence: Lessons from America's Best-Run Companies. Harper & Row, New York, N.Y., 1982.

Pollack, Andrew. "Companies Prepare for Computer Disaster," New York Times, September 25, 1983, p. 1C.

Rosenthal, Murray, and Leonard Farr. Direction and Control Communications to Support Crisis Relocation Planning. System Development Corporation, Santa Monica, CA, DCPA-01-74-C-0284, June 30, 1976.

Scherer, John L. Terrorism: An Annual Survey, Volume 2. J.L. Scherer, Minneapolis, MN, 1983.

Shackelford, Barton, President, Pacific Gas and Electric Company. Luncheon Address, "Power Integration: PG&E and Independent Generation," Independent Energy Producers Annual Meeting, Sacramento, CA, April 4, 1984.

Sokolow, Alvin D., Priscilla L. Hanford, Joan Q. Hogan. Choices for the Unincorporated Community: A Guide to Local Government Alternatives in California. Institute of Governmental Affairs, University of California, Davis, CA, September 1978.

Solar Energy Research Institute (SERI). Renewable Energy Technology Handbook for Military Engineers. Golden, CO, March 1982.

Southern California Edison Company. 1983 Annual Report, From the Old to the New: An Innovative Transition. Rosemead, CA, February 16, 1984.

Stamets, Leigh. "Alternative Fuel and Power for an Energy Emergency District," Information Bulletin No. VII, Energy and Emergency Preparedness Project, Sacramento, CA, September, 1984.

Stanek, E.K. Feasibility of Isolating Vulnerable Equipment of the Electric Power System from Sources of EMP. U.S. Department of Energy, Economic Regulatory Administration, March 1978.

Stevenson, L., and M. Hayman. Local Government Disaster Protection. International City Management Association, Washington, D.C., February 1981.

Stewart, J. Randolph, and William D. Davis. "Organizational Questions Facing an Energy Emergency District," Information Bulletin No. IX, Energy and Emergency Preparedness Project, Sacramento, CA, September, 1984.

Stewart, Robyn Boyer. "Energy Emergency Districts: Background and Models," Information Bulletin No. I. Energy and Emergency Preparedness Project, Sacramento, CA, August, 1984.

Stewart, Robyn Boyer. "Energy Requirements for Emergency Scenarios," Information Bulletin No. X, Energy and Emergency Preparedness Project, Sacramento, CA, September, 1984.

Stewart, Robyn Boyer. Interview with Larry Mullnix, Chief, Operations and Maintenance, California Department of Water Resources, Energy Division, Sacramento, CA, August 17, 1984.

Stewart, Robyn Boyer. Interview with John D. Johnson, Chief, Energy Service and Safety Branch, California Public Utilities Commission, San Francisco, CA, November 2, 1984.

Stewart, Robyn Boyer. Interview with Laura Buchbinder, Chief, Standards and Assessments, Emergency Management Programs Office, Federal Emergency Management Agency, Washington, D.C., October 22, 1984.

Stewart, Robyn Boyer. Interview with Elmer Kaprielian, Vice President, Electric Operations, Pacific Gas & Electric Company, San Francisco, CA, July 10, 1984.

Stewart, Robyn Boyer. Interviews with R. V. Knapp, Manager, System Operation; James W. Jackson, Manager, System Operating & Protection Engineering; Phillip L. Wheeler, Supervising Distribution Engineer, Customer Service Department, Southern California Edison Company, Rosemead, CA, August 23, 1984.

Stewart, Robyn Boyer. Interview with F. A. Bernal, Emergency Planning Administrator, Southern California Gas Company, Los Angeles, CA, August 23, 1984.

Stewart, Robyn Boyer. Interviews with James W. Hunt, Emergency Preparedness Administrator; Roger E. Baldwin, Manager, Electric Operations; Albert F. Hooper, Leakage Mitigation Supervisor, Gas Department; Alan N. Stewart, Manager, Electric Construction & Maintenance; Eric R. Pullium, Alternate Energy Supervisor, San Diego Gas and Electric Company, Daniel J. Eberle, Director, Office of Disaster Preparedness, San Diego County; San Diego, CA, November 14, 1984.

Stewart, Robyn Boyer. Interviews with Richard F. Weiner, Director; I. Edward Markley, Electrical Engineer; Albert F. Bass, Chief, Energy Supply Risk Assessment Branch; and Yvonne Allen, Chief, Liaison and Emergency Reserve Program Branch. U.S. Department of Energy, Office of Energy Emergency Operations, Washington, D.C., October 23, 1984.

Straus, David. "How to Manage a Large Task-Oriented Conference," Successful Meetings, October, 1979.

Tait, John H. "Small Producer Trend," Information Bulletin No. III, Energy and Emergency Preparedness Project, Sacramento, CA, September, 1984.

U.S. Congress, Office of Technology Assessment. The Effects of Nuclear War. U.S. Government Printing Office, Washington, D.C., OTA-NS-89, May 1979.

U.S. Department of Defense, Defense Civil Preparedness Agency. "What the Planner Needs to Know About Electromagnetic Pulse," DCPA Attack Environmental Manual, Washington, D.C., CPG-2-1A4, June 1973.

U.S. Department of Defense, Defense Supply Service. "Request for Proposal for Research Entitled, 'Development of Earthquake Preparedness and Response Measures'." The Pentagon, Washington, D.C., RFP No. MDA903-84-R-0075, March 15, 1984.

U.S. Department of Energy. "Critical Components Project" (Statement of Work). Office of Energy Emergency Operations, Washington, D.C.

U.S. Department of Energy. Power System Emergency Reporting Procedures. Assistant Secretary of Environmental Protection, Safety and Emergency Preparedness, Office of Energy Emergency Operations, Washington, D.C., DOE/EP-0071/1, September 1983.

U.S. Department of Energy. Progress In Energy 1983-1984, Washington, D.C., DOE/S-0030, September 1984.

U.S. Department of Energy. Renewable Technologies Program Summaries. Deputy Assistant Secretary for Renewable Energy, Washington, D.C., DOE/CE-0105, November 1984.

U.S. Department of Energy. Report on the Electric Power System Disturbance of December 22, 1982, Affecting the Western United States. Assistant Secretary for International Affairs and Energy Emergencies, Office of Energy Emergency Operations, Washington, D.C., DOE/IE-0001, February 1984.

U.S. Department of Energy. Summary Outline: Energy Supply Vulnerability Assessment Program (Draft). Office of Energy Emergency Operations, Washington, D.C., June 11, 1982.

U.S. Department of Energy, Energy Information Administration. Inventory of Power Plants in the United States, 1981 Annual. Office of Coal, Nuclear, Electric and Alternate Fuels, Washington, D.C., DOE/EIA-0095(81), September 1982.

U.S. Department of Energy, Energy Information Administration. Inventory of Power Plants in the United States, 1982 Annual. Office of Coal, Nuclear, Electric and Alternate Fuels, Washington, D.C., DOE/EIA-0095(82), June 1983.

U.S. Department of Energy, Energy Information Administration. Inventory of Power Plants in the United States, 1983. Office of Coal, Nuclear, Electric and Alternate Fuels, Washington, D.C., DOE/EIA-0095(83), July 1984.

U.S. Department of Energy, Western Area Power Administration. 1983 Annual Report. Headquarters Office, Golden, CO, GPO 1984-778-149/9177, 1984.

U.S. General Accounting Office. DOD's Industrial Preparedness Program Needs National Policy to Effectively Meet Emergency Needs. Report to the Congress by the Comptroller General, Washington, D.C., PLRD-81-22, May 27, 1981.

U.S. General Accounting Office. Federal Electrical Emergency Preparedness Is Inadequate. Report to the Congress, Washington, D.C., EMD-81-50, May 12, 1981.

U.S. General Accounting Office. The Federal Emergency Management Agency's Plan for Revitalizing U.S. Civil Defense: A Review of Three Major Plan Components. Report by the Comptroller General to the Chairman, Subcommittee on HUD/Independent Agencies, Committee on Appropriations, United States Senate, Washington, D.C., GAO/NSIAD-84-11, April 16, 1984.

U.S. General Accounting Office. The Federal Government is Still Not Adequately Prepared to Respond to Major Electrical Emergencies. Report to the Chairman, Subcommittee on Energy, Environment and Safety Issues Affecting Small Business, Committee on Small Business, House of Representatives, Washington, D.C., GAO/EMD-82-125, September 13, 1982.

U.S. General Accounting Office. Status of the Federal Energy Management Program. Letter Report to the Chairman, Subcommittee on Energy Conservation and Power, Committee on Energy and Commerce, House of Representatives, Washington, D.C., GAO/RCED-84-86, March 7, 1984.

U.S. General Accounting Office. The U.S. Remains Unprepared for Oil Import Disruptions, Volumes 1 and 2. Report to the Congress, Washington, D.C., EMD-81-117, September 29, 1982.

University of Southern California, Office of Program Development. Emergency Disaster Preparedness in Los Angeles County: A Multi-Jurisdictional Dilemma. Federal Emergency Management Agency, DCPA-01-78-C-0234, September 30, 1979.

Western Systems Coordinating Council. "Coordinated Bulk Power Supply Program -- 1983-1993," Reply to United States Department of Energy, Form EP-411, William H. Clagett, Chairman, Western Area Power Administration, April 1, 1984.

Woodward-Clyde Consultants. Assessment of Public Policy Regarding Lifelines and Critical Facilities in California. Prepared for State of California Seismic Safety Commission, Ashok S. Patwardhan, Project Manager, March 1980.

A P P E N D I C E S

A P P E N D I X

A

ENERGY AND EMERGENCY PREPAREDNESS PROJECT

ADVISORY BOARD

ENERGY AND EMERGENCY PREPAREDNESS PROJECT

ADVISORY BOARD

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A P P E N D I X

B

ENERGY AND EMERGENCY PREPAREDNESS PROJECT

INFORMATION BULLETINS

ENERGY AND EMERGENCY PREPAREDNESS PROJECT

INFORMATION BULLETIN No.____

ENERGY AND EMERGENCY PREPAREDNESS PROJECT

INFORMATION BULLETINS*

*Available under separate cover.

A P P E N D I X

C

DAY ONE: PROCESS EVALUATION QUESTIONNAIRE

THIS QUESTIONNAIRE ASKS YOU TO EVALUATE YOUR EXPERIENCES TODAY IN GENERAL SESSION AND IN YOUR SMALL GROUP DISCUSSIONS. PLEASE ANSWER ALL THE QUESTIONS.

THIS COVER PAGE WILL BE REMOVED AND A NUMBER ASSIGNED TO THE QUESTIONNAIRE BEFORE ANY ANALYSIS OF YOUR ANSWERS IS MADE. THE CONFIDENTIALITY OF YOUR ANSWERS WILL BE STRICTLY MAINTAINED.

THIS SAME PROCEDURE WILL BE FOLLOWED WITH ALL QUESTIONNAIRES YOU WILL BE ASKED TO COMPLETE. DATA FROM YOUR QUESTIONNAIRES WILL BE AGGREGATED FOR FINAL ANALYSIS, AND AT NO TIME WILL INDIVIDUAL ATTRIBUTION BE MADE.

THANK YOU FOR YOUR COOPERATION.

____

NAME (PLEASE PRINT)

DAY ONE: PROCESS

I.D._____

THE FOLLOWING ARE A NUMBER OF STATEMENTS REGARDING YOUR PARTICIPATION IN TODAY'S DISCUSSIONS. PLEASE READ THEM AND CHECK THE ANSWER THAT BEST APPLIES TO YOU.

1. I participated in Small Group: 1 2 3 4 5 6 7 8 (*Circle the one that applies*)

2. In small group session today, I thought the facilitator was effective in helping the group work together.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

3. In small group session today, I thought there was enough time to discuss the agenda topics.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

4. In small group session today, I found use of the "group memory" technique helpful.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

6. In small group session today, I thought the recorder was effective in helping the group work together.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

7. Overall, I thought the small group process was effective in narrowing the number of EED models to be considered the next day.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

9. Compared to unfacilitated small group discussions I've participated in, I found today's session to be more productive.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

10. Overall, I thought the General Session process was effective in narrowing the number of EED models to be considered the next day.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

COMMENTS:

A P P E N D I X

D

DAY TWO: EED MODEL, PROCESS, AND CONFERENCE

EVALUATION QUESTIONNAIRE

THIS QUESTIONNAIRE IS IN THREE PARTS. THE FIRST PART WILL BE USED TO EVALUATE THE ENERGY EMERGENCY DISTRICT MODELS THAT YOU HAVE BEEN WORKING ON IN SMALL GROUP, CONFERENCE COMMITTEE AND GENERAL SESSIONS.

THE SECOND PART ASKS YOU TO EVALUATE YOUR EXPERIENCES TODAY IN THE VARIOUS DISCUSSION GROUPS.

THE THIRD PART ASKS YOU TO EVALUATE THE CONFERENCE. PLEASE ANSWER ALL QUESTIONS. AS WITH YESTERDAY'S QUESTIONNAIRE, THIS COVER PAGE WILL BE REMOVED AND A NUMBER ASSIGNED TO THE QUESTIONNAIRE <u>BEFORE</u> ANY ANALYSIS OF YOUR ANSWERS IS MADE. <u>THE CONFIDENTIALITY OF YOUR ANSWERS WILL BE STRICTLY MAINTAINED.</u>

THANK YOU FOR YOUR COOPERATION.

____

NAME (PLEASE PRINT)

PART I

EVALUATION OF EED MODEL

I.D.______

THE FOLLOWING QUESTIONS ASK YOU TO EVALUATE THIS MODEL OF THE ENERGY EMERGENCY DISTRICT CONCEPT IN TERMS OF A NUMBER OF DIMENSIONS. WE ARE INTERESTED IN KNOWING IF, IN YOUR OPINION, THIS MODEL WOULD "WORK", IF IMPLEMENTED. PLEASE READ THE QUESTIONS AND/OR STATEMENTS AND CHECK THE ANSWER THAT BEST APPLIES FOR YOU.

1. In your opinion, could this model perform the prescribed EED functions? Would you say that it was:

   Very Likely__/ Likely__/ No Opinion__/ Somewhat Likely__/ Not At All Likely__/

2. In your opinion, how useful would you say this model was with respect to enhancing the capabilities of:

   a) emergency services agencies

   Very Useful__/ Useful__/ No Opinion__/ Somewhat Useful__/ Not At All Useful__/

   b) city governments

   Very Useful__/ Useful__/ No Opinion__/ Somewhat Useful__/ Not At All Useful__/

   c) county governments

   Very Useful__/ Useful__/ No Opinion__/ Somewhat Useful__/ Not At All Useful__/

   d) special districts (e.g., fire, water, sewage treatment, etc.)

   Very Useful__/ Useful__/ No Opinion__/ Somewhat Useful__/ Not At All Useful__/

   e) state government

   Very Useful__/ Useful__/ No Opinion__/ Somewhat Useful__/ Not At All Useful__/

   f) federal government

   Very Useful__/ Useful__/ No Opinion__/ Somewhat Useful__/ Not At All Useful__/

   g) private and public energy utility companies

   Very Useful__/ Useful__/ No Opinion__/ Somewhat Useful__/ Not At All Useful__/

   h) small power producers

   Very Useful__/ Useful__/ No Opinion__/ Somewhat Useful__/ Not At All Useful__/

   i) other ______________________________

   Very Useful__/ Useful__/ No Opinion__/ Somewhat Useful__/ Not At All Useful__/

3. In your opinion, how feasible would you say this model is with respect to:

   a) political implementation *(This refers to the probability that this model might be too controversial to implement.)*

   Very Feasible__/ Feasible__/ N/O__/ Somewhat Feasible__/ Not At All Feasible__/

   b) fiscal implementation *(This refers to the probability that the proposed funding for this model could be obtained.)*

   Very Feasible__/ Feasible__/ N/O__/ Somewhat Feasible__/ Not At All Feasible__/

EVALUATION OF EED MODEL

I.D.________

3. (Continued) In your opinion, how feasible would you say this model is with respect to:

   c) legal implementation *(This refers to whether this model could be implemented by using currently existing laws or whether new laws would have to be added.)*

   Very Feasible__/ Feasible__/ N/O__/ Somewhat Feasible__/ Not At All Feasible__/

4. In your opinion, how likely is this model to be socially acceptable?

   Very Likely__/ Likely__/ No Opinion__/ Somewhat Likely__/ Not At All Likely__/

5. In your opinion, who would benefit if this model were implemented? *(Check as many as apply.)*

   __/ city government
   __/ county government
   __/ special districts (e.g., fire, water, sewage treatment, etc.)
   __/ state government
   __/ federal government
   __/ private and public energy utility companies
   __/ small power producers
   __/ the citizenry living in the EED
   __/ critical facilities located in the EED
   __/ public health and safety facilities (e.g., hospitals, law enforcement, emergency communication centers, etc.)
   __/ other ______________________________

6. In your opinion, who would benefit the <u>most</u>? *(Select only one from the list provided in #5, and print it below.)*

7. In your opinion, who would benefit the <u>least</u>? *(Select only one from the list provided in #5, and print it below.)*

8. In general, would your company or agency be affected if this model were implemented?

   __/ Yes __/ No

9. In general, do you think this model <u>should be</u> developed and implemented?

   __/ Yes __/ No

10. Compared to other EED models discussed at this conference, how would you rate this model on a scale of 1 to 5, with 1 meaning "worst" and 5 meaning "best"?

   __/ 1 __/ 2 __/ 3 __/ 4 __/ 5

PART II DAY TWO: PROCESS

I.D.______

THE FOLLOWING ARE A NUMBER OF STATEMENTS REGARDING YOUR PARTICIPATION IN TODAY'S DISCUSSIONS. PLEASE READ THEM AND CHECK THE ANSWER THAT BEST APPLIES TO YOU.

1. I participated in Small Group: 1 2 3 4 5 6 7 8 (*Circle the one that applies*)

2. In small group session today, I thought the facilitator was effective in helping the group work together.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

3. In small group session today, I thought there was enough time to discuss the agenda topics.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

4. In small group session today, I found use of the "group memory" technique helpful.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

6. In small group session today, I thought the recorder was effective in helping the group work together.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

7. Overall, I thought the small group process was effective in enabling the group to ask the hard questions of the EED models.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics.

   Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

9. I participated in Conference Committee: 1 2 3 (*Circle the one that applies*)

10. I thought the conference committee process was confusing.

    Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

11. In the conference committee today, I thought the facilitator was effective in helping the group work together.

    Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

12. In the conference committee today, I thought the recorder was effective in helping the group work together.

    Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

I.D.______

13. Overall, the conference committee process was effective in producing an agreed-upon EED model for presentation to the General Session.

    Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

14. During lunch, I thought the "Flip Points" exercise helped me to think about the impacts of an EED.

    Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

15. I thought the "Flip Points" exercise was a waste of time.

    Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

16. The General Session process was effective in enabling the group to evaluate the three models presented in the last session.

    Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

17. Involving the people who might be implementing or managing an EED, increases the likelihood of its effective implementation.

    Strongly Agree__/ Agree__/ No Opinion__/ Disagree__/ Strongly Disagree__/

18. What did you like <u>most</u> about the collaborative process?

19. What did you like <u>least</u> about the collaborative process?

20. Overall, how would you rate the collaborative process?

    Effective__/ Somewhat Effective__/ No Opinion__/ Somewhat Ineffective__/ Ineffective__/

21. Prior to this conference, had you ever participated in a collaborative process meeting, workshop or conference, using trained facilitators and recorders?

    __/ Yes __/ No *(If Yes, please circle the ones that apply)*

COMMENTS:

PART III

CONFERENCE EVALUATION

I.D.________

IT WOULD BE VERY HELPFUL TO US TO KNOW HOW EFFECTIVE THIS CONFERENCE WAS IN MEETING OUR PROJECT GOALS. YOUR ANSWERS TO THE FOLLOWING QUESTIONS WILL BE APPRECIATED.

1. How useful would you say the Information Bulletins were in preparing you for the conference? Would you say they were:

   Very Useful__/ Useful__/ No Opinion__/ Somewhat Useful__/ Not At All Useful__/

2. Were the Information Bulletins *(Check as many as apply)*:

   __/ readable
   __/ understandable
   __/ relevant
   __/ interesting
   __/ other ____________________
   __/ too technical
   __/ not technical enough
   __/ educational
   __/ boring

3. In your contacts with Project staff, were they *(Check as many as apply)*:

   __/ professional
   __/ helpful
   __/ rude
   __/ other ____________________
   __/ courteous
   __/ knowledgeable
   __/ unprofessional

4. In general session on the first day (Tuesday), were the presentations *(Check as many as apply)*:

   __/ helpful
   __/ interesting
   __/ confusing
   __/ other ____________________
   __/ boring
   __/ clear and understandable
   __/ not at all helpful

5. What did you like most about the conference?

6. What did you like least about the conference?

7. How would you characterize your background/expertise? *(Check as many as apply and then circle the one category that best describes your expertise.)*

   __/ Small Power Producer
   __/ Local Emergency Response Provider
   __/ City/County Administrator
   __/ Private Sector Emergency Planner
   __/ Military Personnel
   __/ Federal Agency Representative
   __/ Regional Representative
   __/ Transit District Representative
   __/ Technical Energy Expert
   __/ Major Energy Providers (non-utility)
   __/ Local Elected Official
   __/ County Emergency Coordinator
   __/ Policy/Legal/Theory Expert
   __/ Utility Operations Manager
   __/ Financial Expert
   __/ State Agency Representative
   __/ Media/Public Info Officer
   __/ Major Energy User (Agriculture, Industry, Residential, Communications)
   __/ Other ________________________________

PART III

CONFERENCE EVALUATION

I.D.______

8. Are you __/ male or __/ female? *(Check which one applies)*

9. What is your ag ______________

10. Do you think this conference was an appropriate way of exploring the idea of an energy emergency district (EED)?

    __/ Yes __/ No

11. In general, do you think any sort of an energy emergency district should be developed and implemented?

    __/ Yes __/ No

12. Please explain your answer to #11.

13. Would you be willing to review and critique the first draft of the Energy and Emergency Preparedness Project's Final Report to FEMA?

    __/ Yes __/ No

14. Would you like a copy of the Project's Final Report when it is completed?

    __/ Yes __/ No

Please use the back of this page to make any comments you wish about any aspect of the conference.

THANK YOU FOR YOUR COOPERATION!

A P P E N D I X

E

ENERGY AND EMERGENCY PREPAREDNESS PROJECT

CONFERENCE PARTICIPANT LIST

ENERGY AND EMERGENCY PREPAREDNESS PROJECT

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W.O. "Jim" Holcomb, Director
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A P P E N D I X

F

ENERGY EMERGENCY DISTRICT MODELS

EVALUATION RESULTS

RESULTS OF CONFERENCE EVALUATION

Key

Group 1	(n = 6)	Model B
Group 2	(n = 13)	Model F
Group 3	(n = 13)	Model G
Group 4	(n = 13)	Model B/F/G
Group 5	(n = 9)	Model F
Group 6	(n = 10)	Model G
Group 7	(n = 8)	Model B/F/G
Group 8	(n = 10)	Model F

Range of Scores

0 - 0.4	=	No Opinion
0.5 - 1.4	=	Not At All Likely Not At All Useful Not At All Feasible Ineffective
1.5 - 2.4	=	Somewhat Likely Somewhat Useful Somewhat Feasible Somewhat Ineffective
2.5 - 3.4	=	Likely Useful Feasible Somewhat Effective
3.5 - 4.0	=	Very Likely Very Useful Very Feasible Effective

$\bar{x}$ Score = The total score divided by the number of responses for each question

n = The number of respondents or members of a given small group

NOTE: Responses evaluating the various EED models are based on the assigned model as modified by each group.

RESULTS OF EED MODEL EVALUATION

GROUP 1 - MODEL B
(n=6)

	$\bar{x}$ Score	Percentage	n
1. In your opinion, could this model perform the prescribed EED functions? Would you say that it was (Very Likely = 4, Not At All Likely = 1)?	1.8 = Somewhat Likely	n/a	6
2. In your opinion, how useful would you say this model was with respect to enhancing the capabilities of: (Very Useful = 5, Not At All Useful = 1)			
a) Emergency services agencies	2.7 = Useful	n/a	6
b) City governments	2.7 = Useful	n/a	6
c) County governments	2.7 = Useful	n/a	6
d) Special districts (e.g., fire, water, sewage treatment, etc.)	2.7 = Useful	n/a	6
e) State government	2.8 = Useful	n/a	6
f) Federal government	2.5 = Useful	n/a	6
g) Private and public energy utility companies	2.2 = Somewhat Useful	n/a	6
h) Small power producers	2.2 = Somewhat Useful	n/a	6
3. In your opinion, how feasible would you say this model is with respect to: (Very Feasible = 4, Not At All Feasible = 1)			
a) Political implementation (probability that too controversial to implement)	2.2 = Somewhat Feasible	n/a	6

AD-A158 277 ENERGY EMERGENCY DISTRICTS: CONCEPTS AND APPLICATIONS 3/4
(U) CALIFORNIA OFFICE OF EMERGENCY SERVICES SACRAMENTO
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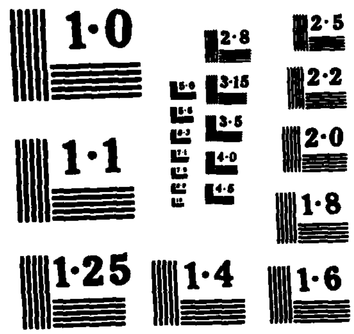
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4·5

RESULTS OF EED MODEL EVALUATION
GROUP 1 - MODEL B (cont'd)

	$\bar{x}$ Score	Percentage	n
b) Fiscal implementation (probability that proposed funding could be obtained)	2.0 = Somewhat Feasible	n/a	6
c) Legal implementation (under existing laws or new laws needed	2.8 = Feasible	n/a	6
4. In your opinion, how likely is this model to be socially acceptable? (Very Likely = 4, Not At All Likely = 1)	2.0 = Somewhat Likely	n/a	6
5. In your opinion, who would benefit if this model were implemented? (Check as many as apply.)			
a) City government	n/a	66%	4
b) County government	n/a	83%	5
c) Special districts (e.g., fire, water, sewage treatment, etc.)	n/a	50%	3
d) State government	n/a	83%	5
e) Federal government	n/a	66%	4
f) Private and public energy utility companies	n/a	17%	1
g) Small power producers	n/a	33%	2
h) The citizenry living in the EED	n/a	83%	4
i) Critical facilities located in the EED	n/a	50%	3
j) Public health and safety facilities (e.g., hospitals, law enforcement, emergency communication centers, etc.)	n/a	50%	3

RESULTS OF EED MODEL EVALUATION
GROUP 1 - MODEL B (cont'd)

	$\bar{x}$ Score	Percentage	n
6. In your opinion, who would benefit the <u>most</u>?			
a) City government	n/a	17%	1
d) State government	n/a	17%	1
e) Federal government	n/a	17%	1
h) The citizenry living in the EED	n/a	17%	1
i) Critical facilities located in the EED	n/a	17%	1
(No response)	n/a	17%	1
7. In your opinion, who would benefit the <u>least</u>?			
e) Federal government	n/a	17%	1
f) Private and public energy utility companies	n/a	17%	1
g) Small power producers	n/a	17%	1
(No response)	n/a	50%	3
8. In general, would your company or agency be affected if this model were implemented?			
Yes	n/a	83%	5
No	n/a	17%	1
9. In general, do you think this model <u>should be</u> developed and implemented?			
Yes	n/a	33%	2
No	n/a	67%	4

RESULTS OF EED MODEL EVALUATION
GROUP 1 - MODEL B (cont'd)

	$\bar{x}$ Score	Percentage	n
10. Compared to other EED models discussed at this conference, how would you rate this model on a scale of 1 to 5, with 1 meaning "worst" and 5 meaning "best"?			
3	n/a	50%	3
4	n/a	33%	2
5	n/a	17%	1
11. Do you think this conference was an appropriate way of exploring the idea of an energy emergency district (EED)?			
Yes	n/a	50%	3
No	n/a	50%	3
12. In general, do you think <u>any</u> sort of an energy emergency district should be developed and implemented?			
Yes	n/a	17%	1
No	n/a	83%	5

DEMOGRAPHIC DATA

Expertise/Background		Sex		Age	
County Emergency Coordinators	4	Males	6	$\bar{x}$	49.5
Policy/Legal/Theory Expert	1	Females	0	Range	35-64
Utility Operations Manager	1				

RESULTS OF EED MODEL EVALUATION

GROUP 2 - MODEL F
(n=13)

	$\bar{x}$ Score	Percentage	n
1. In your opinion, could this model perform the prescribed EED functions? Would you say that it was (Very Likely = 4, Not At All Likely = 1)?	3.5 = Very Likely	n/a	13
2. In your opinion, how useful would you say this model was with respect to enhancing the capabilities of: (Very Useful = 4, Not At All Useful = 1):			
a) Emergency services agencies	3.5 = Very Useful	n/a	13
b) City governments	2.8 = Useful	n/a	13
c) County governments	3.3 = Useful	n/a	13
d) Special districts (e.g., fire, water, sewage treatment, etc.)	2.9 = Useful	n/a	13
e) State government	3.3 = Useful	n/a	13
f) Federal government	3.0 = Useful	n/a	13
g) Private and public energy utility companies	3.2 = Useful	n/a	13
h) Small power producers	2.7 = Useful	n/a	13
3. In your opinion, how feasible would you say this model is with respect to: (Very Feasible = 4, Not At All Feasible = 1)			
a) Political implementation (probability that too controversial to implement)	3.2 = Feasible	n/a	13

RESULTS OF EED MODEL EVALUATION
GROUP 2 - MODEL F (cont'd)

	$\bar{x}$ Score	Percentage	n
b) Fiscal implementation (probability that proposed funding could be obtained)	3.2 = Feasible	n/a	13
c) Legal implementation (under existing laws or new laws needed)	3.2 = Feasible	n/a	13
4. In your opinion, how likely is this model to be socially acceptable? (Very Likely = 4, Not At All Likely = 1)	3.4 = Likely	n/a	13
5. In your opinion, who would benefit if this model were implemented? (Check as many as apply.)			
a) City government	n/a	92%	12
b) County government	n/a	92%	12
c) Special districts (e.g., fire, water, sewage treatment, etc.)	n/a	100%	13
d) State government	n/a	92%	12
e) Federal government	n/a	92%	12
f) Private and public energy utility companies	n/a	92%	12
g) Small power producers	n/a	85%	11
h) The citizenry living in the EED	n/a	100%	13
i) Critical facilities located in the EED	n/a	100%	13
j) Public health and safety facilities (e.g., hospitals, law enforcement, emergency communication centers, etc.)	n/a	100%	13

RESULTS OF EED MODEL EVALUATION
GROUP 2 - MODEL F (cont'd)

	$\bar{x}$ Score	Percentage	n
6. In your opinion, who would benefit the most?			
d) State government	n/a	23%	3
g) Small power producers	n/a	8%	1
h) The citizenry living in the EED	n/a	69%	9
7. In your opinion, who would benefit the least?			
c) Special districts	n/a	15%	2
e) Federal government	n/a	23%	3
f) Private and public energy utility companies	n/a	15%	2
g) Small power producers	n/a	15%	2
h) The citizenry living in the EED	n/a	8%	1
(No response)	n/a	23%	3
8. In general, would your company or agency be affected if this model were implemented?			
Yes	n/a	77%	10
No	n/a	23%	3
9. In general, do you think this model should be developed and implemented?			
Yes	n/a	100%	13
No	n/a	0%	0

RESULTS OF EED MODEL EVALUATION
GROUP 2 - MODEL F (cont'd)

	$\bar{x}$ Score	Percentage	n
10. Compared to other EED models discussed at this conference, how would you rate this model on a scale of 1 to 5, with 1 meaning "worst" and 5 meaning "best"?			
3	n/a	15%	2
4	n/a	15%	2
5	n/a	69%	9
11. Do you think this conference was an appropriate way of exploring the idea of an energy emergency district (EED)?			
Yes	n/a	85%	11
No	n/a	0%	0
(No response)	n/a	15%	2
12. In general, do you think <u>any</u> sort of an energy emergency district should be developed and implemented?			
Yes	n/a	62%	8
No	n/a	31%	4
(No response)	n/a	8%	1

RESULTS OF EED MODEL EVALUATION
GROUP 2 - MODEL F (cont'd)

DEMOGRAPHIC DATA

Expertise/Background

Local Emergency Response Provider	1
Federal Agency Respresentative	2
Technical Energy Expert	1
County Emergency Coordinator	4
Policy/Legal/Theory Expert	2
Utility Operations Manager	2
No response	1

Sex

Males	11
Females	0
No Response	2

Age

$\bar{x}$	37.8
Range	35-64
No Response	2

RESULTS OF EED MODEL EVALUATION

GROUP 3 - MODEL G
(n=13)

	$\bar{x}$ Score	Percentage	n
1. In your opinion, could this model perform the prescribed EED functions? Would you say that it was (Very Likely = 4, Not At All Likely = 1)?	3.1 = Likely	n/a	13
2. In your opinion, how useful would you say this model was with respect to enhancing the capabilities of: (Very Useful = 4, Not At All Useful = 1)			
a) Emergency services agencies	3.1 = Useful	n/a	13
b) City governments	2.9 = Useful	n/a	13
c) County governments	2.6 = Useful	n/a	13
d) Special districts (e.g., fire, water, sewage treatments, etc.)	2.2 = Somewhat Useful	n/a	13
e) State government	3.0 = Useful	n/a	13
f) Federal government	2.6 = Useful	n/a	12
	(No response)	n/a	1
g) Private and public energy utility companies	2.6 = Useful	n/a	12
	(No response)	n/a	1
h) Small power producers	1.9 = Somewhat Useful	n/a	12
	(No response)	n/a	1

RESULTS OF EED MODEL EVALUATION
GROUP 3 - MODEL G (cont'd)

	$\bar{x}$ Score	Percentage	n
3. In your opinion, how feasible would you say this model is with respect to: (Very Feasible = 4, Not At All Feasible = 1)			
a) Political implementation (probability that too controversial to implement)	3.1 = Feasible	n/a	13
b) Fiscal implementation (probability that proposed funding could be obtained)	2.3 = Somewhat Feasible	n/a	12
	(No response)	n/a	1
c) Legal implementation (under existing laws or new laws needed)	2.9 = Feasible	n/a	13
4. In your opinion, how likely is this model to be socially acceptable? (Very Likely = 4, Not At All Likely = 1)	3.3 = Likely	n/a	12
	(No response)	n/a	1
5. In your opinion, who would benefit if this model were implemented? (Check as many as apply.)			
a) City government	n/a	92%	12
b) County government	n/a	92%	12
c) Special districts (e.g., fire, water, sewage treatment, etc.)	n/a	46%	6
d) State government	n/a	100%	13
e) Federal government	n/a	69%	9
f) Private and public energy utility companies	n/a	69%	9
g) Small power producers	n/a	38%	5

RESULTS OF EED MODEL EVALUATION
<u>GROUP 3 - MODEL G</u> (cont'd)

	$\bar{x}$ Score	Percentage	n
5. (cont'd) In your opinion, who would benefit if this model were implemented? (Check as many as apply.)			
h) The citizenry living in the EED	n/a	77%	10
i) Critical facilities located in the EED	n/a	69%	9
j) Public health and safety facilities (e.g., hospitals, law enforcement, emergency communication centers, etc.)	n/a	85%	11
6. In your opinion, who would benefit the <u>most</u>?			
b) County government	n/a	25%	3
d) State government	n/a	38%	5
h) The citizenry living in the EED	n/a	15%	2
i) Critical facilities located in the EED	n/a	7%	1
(No response)	n/a	15%	2
7. In your opinion, who would benefit the <u>least</u>?			
e) Federal government	n/a	15%	2
f) Private and public energy utility companies	n/a	15%	2
g) Small power producers	n/a	23%	3
(No response)	n/a	46%	6

RESULTS OF EED MODEL EVALUATION
GROUP 3 - MODEL G (cont'd)

	$\bar{x}$ Score	Percentage	n
8. In general, would your company or agency be affected if this model were implemented?			
Yes	n/a	62%	8
No	n/a	38%	5
9. In general, do you think this model <u>should be</u> developed and implemented?			
Yes	n/a	69%	9
No	n/a	23%	3
(No response)	n/a	7%	1
10. Compared to other EED models discussed at this conference, how would you rate this model on a scale of 1 to 5, with 1 meaning "worst" and 5 meaning "best"?			
1	n/a	7%	1
3	n/a	23%	3
4	n/a	46%	6
5	n/a	23%	3
11. Do you think this conference was an appropriate way of exploring the idea of an energy emergency district (EED)?			
Yes	n/a	92%	12
No	n/a	7%	1

RESULTS OF EED MODEL EVALUATION
GROUP 3 - MODEL G (cont'd)

	$\bar{x}$ Score	Percentage	n
12. In general, do you think any sort of an energy emergency district should be developed and implemented?			
Yes	n/a	38%	5
No	n/a	54%	7
(No response)	n/a	7%	1

DEMOGRAPHIC DATA

Expertise/Background	
Local Emergency Response Provider	1
City/County Administrator	1
Private Sector Emergency Planner	1
Regional Representative	1
Major Energy Provider (non-utility)	1
County Emergency Coordinator	3
Policy/Legal/Theory Expert	1
Utility Operations Manager	1
Financial Expert	1
State Agency Representative	1
Media/Public Info Officer	1

Sex	
Males	13
Females	0

Age	
$\bar{x}$	46.9
Range	31-62

RESULTS OF EED MODEL EVALUATION

GROUP 4 - MODEL B/F/G
(n=13)

	$\overline{x}$ Score	Percentage	n
1. In your opinion, could this model perform the prescribed EED functions? Would you say that it was (Very Likely = 4, Not At All Likely = 1)?	2.9 = Likely	n/a	13
2. In your opinion, how useful would you say this model was with respect to enhancing the capabilities of: (Very Useful = 4, Not At All Useful = 1)			
a) Emergency services agencies	3.2 = Useful	n/a	13
b) City governments	2.7 = Useful	n/a	13
c) County governments	2.8 = Useful	n/a	13
d) Special districts (e.g., fire, water, sewage treatment, etc.)	2.6 = Useful	n/a	13
e) State government	3.2 = Useful	n/a	13
f) Federal government	2.2 = Somewhat Useful	n/a	13
g) Private and public energy utility companies	2.7 = Useful	n/a	13
h) Small power producers	1.9 = Somewhat Useful	n/a	13
3. In your opinion, how feasible would you say this model is with respect to: (Very Feasible = 4, Not At All Feasible = 1)			
a) Political implementation (probability that too controversial to implement)	3.4 = Feasible	n/a	13

RESULTS OF EED MODEL EVALUATION
GROUP 4 - MODEL B/F/G (cont'd)

	$\bar{x}$ Score	Percentage	n
b) Fiscal implementation (probability that proposed funding could be obtained)	2.8 = Feasible	n/a	13
c) Legal implementation (under existing laws or new laws needed	3.2 = Feasible	n/a	13
4. In your opinion, how likely is this model to be socially acceptable? (Very Like = 4, Not At All Likely = 1)	3.1 = Likely	n/a	13
5. In your opinion, who would benefit if this model were implemented? (Check as many as apply.)			
a) City government	n/a	85%	11
b) County government	n/a	85%	11
c) Special districts (e.g., fire, water, sewage treatment, etc.)	n/a	54%	7
d) State government	n/a	92%	12
e) Federal government	n/a	77%	10
f) Private and public energy utility companies	n/a	100%	13
g) Small power producers	n/a	85%	11
h) The citizenry living in the EED	n/a	85%	11
i) Critical facilities located in the EED	n/a	92%	12
j) Public health and safety facilities (e.g., hospitals, law enforcement, emergency communications centers, etc.)	n/a	92%	12

RESULTS OF EED MODEL EVALUATION
GROUP 4 - MODEL B/F/G (cont'd)

	$\bar{x}$ Score	Percentage	n
6. In your opinion, who would benefit the <u>most</u>?			
a) City government	n/a	7%	1
b) County government	n/a	7%	1
d) State government	n/a	15%	2
h) The citizenry living in the EED	n/a	38%	5
i) Critical facilities located in the EED	n/a	23%	3
(No response)	n/a	7%	1
7. In your opinion, who would benefit the <u>least</u>?			
c) Special districts	n/a	7%	1
e) Federal government	n/a	15%	2
g) Small power producers	n/a	23%	3
h) The citizenry living in the EED	n/a	15%	2
(No response)	n/a	38%	5
8. In general, would your company or agency be affected if this model were implemented?			
Yes	n/a	77%	10
No	n/a	15%	2
(No response)	n/a	7%	1

RESULTS OF EED MODEL EVALUATION
GROUP 4 - MODEL B/F/G (cont'd)

	$\bar{x}$ Score	Percentage	n
9. In general, do you think this model <u>should be</u> developed and implemented?			
Yes	n/a	92%	12
No	n/a	7%	1
10. Compared to other EED models discussed at this conference, how would you rate this model on a scale of 1 to 5, with 1 meaning "worst" and 5 meaning "best"?			
3	n/a	7%	1
4	n/a	23%	3
5	n/a	62%	8
(No response)	n/a	7%	1
11. Do you think this conference was an appropriate way of exploring the idea of an energy emergency district (EDD)?			
Yes	n/a	85%	11
No	n/a	0%	0
(No response)	n/a	15%	2
12. In general, do you think <u>any</u> sort of an energy emergency district should be developed and implemented?			
Yes	n/a	46%	6
No	n/a	38%	5
(No response)	n/a	15%	2

RESULTS OF EED MODEL EVALUATION
GROUP 4 - MODEL B/F/G (cont'd)

DEMOGRAPHIC DATA

Expertise/Background		Sex		Age	
City/County Administrator	2	Males	8	$\bar{x}$	45.2
Private Sector Emergency Planner	1	Females	3		
Federal Agency Representative	1	No Response	2	Range	28-61
Regional Representative	1				
Local Elected Official	1				
County Emergency Coordinator	2				
Policy/Legal/Theory Expert	2				
Utility Operations Manager	1				
State Agency Representative	2				

RESULTS OF EED MODEL EVALUATION

GROUP 5 - MODEL F
(n=9)

	$\bar{x}$ Score	Percentage	n
1. In your opinion, could this model perform the prescribed EED functions? Would you say that it was (Very Likely = 4, Not At All Likely = 1)?	2.4 = Somewhat Likely	n/a	9
2. In your opinion, how useful would you say this model was with respect to enhancing the capabilities of: (Very Useful = 4, Not At All Useful = 1)			
a) Emergency services agencies	1.7 = Somewhat Useful	n/a	9
b) City governments	2.4 = Somewhat Useful	n/a	9
c) County governments	2.7 = Useful	n/a	9
d) Special districts (e.g., fire, water, sewage treatment, etc.)	2.0 = Somewhat Useful	n/a	9
e) State government	2.8 = Useful	n/a	9
f) Federal government	1.4 = Not At All Useful	n/a	9
g) Private and public energy utility companies	2.0 = Somewhat Useful	n/a	9
h) Small power producers	1.9 = Somewhat Useful	n/a	9

RESULTS OF EED MODEL EVALUATION
GROUP 5 - MODEL F (cont'd)

	$\bar{x}$ Score	Percentage	n
3. In your opinion, how feasible would you say this model is with respect to: (Very Feasible = 4, Not At All Feasible = 1)			
a) Political implementation (probability that too controversial to implement)	2.6 = Feasible	n/a	9
b) Fiscal implementation (probability that proposed funding could be obtained)	2.2 = Somewhat Feasible	n/a	9
c) Legal implementation (under existing laws or new laws needed)	2.6 = Feasible	n/a	9
4. In your opinion, how likely is this model to be socially acceptable? (Very Likely = 4, Not At All Likely = 1)	1.9 = Somewhat Likely	n/a	9
5. In your opinion, who would benefit if this model were implemented? (Check as many as apply.)			
a) City government	n/a	55%	5
b) County government	n/a	78%	7
c) Special districts (e.g., fire, water, sewage treatment, etc.)	n/a	44%	4
d) State government	n/a	67%	6
e) Federal government	n/a	11%	1
f) Private and public energy utility companies	n/a	55%	5
g) Small power producers	n/a	22%	2

RESULTS OF EED MODEL EVALUATION
GROUP 5 - MODEL F (cont'd)

	$\bar{x}$ Score	Percentage	n
5. (cont'd) In your opinion, who would benefit if this model were implemented? (Check as many as apply.)			
h) The citizenry living in the EED	n/a	44%	4
i) Critical facilities located in the EED	n/a	78%	7
j) Public health and safety facilities (e.g. hospitals, law enforcement, emergency communication centers, etc.)	n/a	67%	6
6. In your opinion, who would benefit the <u>most</u>?			
b) County government	n/a	11%	1
d) State government	n/a	22%	2
h) The citizenry living in the EED	n/a	11%	1
i) Critical facilities located in the EED	n/a	44%	4
(No response)	n/a	11%	1
7. In your opinion, who would benefit the <u>least</u>?			
e) Federal government	n/a	22%	2
f) Private and public energy utility companies	n/a	11%	1
g) Small power producers	n/a	22%	2
h) The citizenry living in the EED	n/a	22%	2
(No response)	n/a	22%	2

RESULTS OF EED MODEL EVALUATION
GROUP 5 - MODEL F (cont'd)

	$\bar{x}$ Score	Percentage	n
8. In general, would your company or agency be affected if this model were implemented?			
Yes	n/a	56%	5
No	n/a	33%	3
(No response)	n/a	11%	1
9. In general, do you think this model <u>should be</u> developed and implemented?			
Yes	n/a	33%	3
No	n/a	67%	6
10. Compared to other EED models discussed at this conference, how would you rate this model on a scale of 1 to 5, with 1 meaning "worst" and 5 meaning "best"?			
2	n/a	22%	2
3	n/a	22%	2
4	n/a	33%	3
5	n/a	22%	2
11. Do you think this conference was an appropriate way of exploring the idea of an energy emergency district (EED)?			
Yes	n/a	56%	5
No	n/a	33%	3
(No response)	n/a	11%	1

RESULTS OF EED MODEL EVALUATION
GROUP 5 - MODEL F (cont'd)

	$\bar{x}$ Score	Percentage	n
12. In general, do you think any sort of an energy emergency district should be developed and implemented?			
Yes	n/a	67%	6
No	n/a	22%	2
(No response)	n/a	11%	1

DEMOGRAPHIC DATA

Expertise/Background		Sex		Age	
Local Emergency Response Provider	1	Males	8	$\bar{x}$	47.8
Private Sector Emergency Planner	1	Females	0	Range	36-60
Military Personnel	1	No Response	1	No Response	2
Federal Agency Representative	1				
Local Elected Official	1				
County Emergency Coordinator	2				
Policy/Legal/Theory Expert	2				

RESULTS OF EED MODEL EVALUATION

GROUP 6 - MODEL G
(n=10)

	$\bar{x}$ Score	Percentage	n
1. In your opinion, could this model perform the prescribed EED functions? Would you say that it was (Very Likely = 4, Not At All Likely = 1)?	3.6 = Very Likely	n/a	10
2. In your opinion, how useful would you say this model was with respect to enhancing the capabilities of: (Very Useful = 4, Not At All Useful = 1)			
a) Emergency services agencies	3.3 = Useful	n/a	10
b) City governments	2.3 = Somewhat Useful	n/a	10
c) County governments	3.2 = Useful	n/a	10
d) Special districts (e.g., fire, water, sewage treatment, etc.)	2.3 = Somewhat Useful	n/a	10
e) State government	3.3 = Useful	n/a	10
f) Federal government	2.7 = Useful	n/a	10
g) Private and public energy utility companies	2.5 = Useful	n/a	10
h) Small power producers	1.5 = Somewhat Useful	n/a	10

RESULTS OF EED MODEL EVALUATION
GROUP 6 - MODEL G (cont'd)

	$\bar{x}$ Score	Percentage	n
3. In your opinion, how feasible would you say this model is with respect to: (Very Feasible = 4, Not At All Feasible = 1)			
a) Political implementation (probability that too controversial to implement)	3.2 = Feasible	n/a	10
b) Fiscal implementation (probability that proposed funding could be obtained)	3.0 = Feasible	n/a	10
c) Legal implementation (under existing laws or new laws needed)	3.4 = Feasible	n/a	10
4. In your opinion, how likely is this model to be socially acceptable? (Very Likely = 4, Not At All Likely = 1)	3.3 = Likely	n/a	10
5. In your opinion, who would benefit if this model were implemented? (Check as many as apply.)			
a) City government	n/a	80%	8
b) County government	n/a	90%	9
c) Special districts (e.g., fire, water, sewage treatment, etc.)	n/a	70%	7
d) State government	n/a	90%	9
e) Federal government	n/a	80%	8
f) Private and public energy utility companies	n/a	70%	7
g) Small power producers	n/a	70%	7

RESULTS OF EED MODEL EVALUATION
GROUP 6 - MODEL G (cont'd)

	$\bar{x}$ Score	Percentage	n
5. (cont'd) In your opinion, who would benefit if this model were implemented? (Check as many as apply.)			
h) The citizenry living in the EED	n/a	90%	9
i) Critical facilities located in the EED	n/a	90%	9
j) Public health and safety facilities (e.g. hospitals, law enforcement, emergency communication centers, etc.)	n/a	80%	8
6. In your opinion, who would benefit the most?			
d) State government	n/a	20%	2
e) Federal government	n/a	10%	1
h) The citizenry living in the EED	n/a	30%	3
i) Critical facilities located in the EED	n/a	20%	2
(No response)	n/a	20%	2
7. In your opinion, who would benefit the least?			
a) City government	n/a	10%	1
c) Special districts	n/a	20%	2
f) Private and public energy utility companies	n/a	20%	2
g) Small power producers	n/a	30%	3
j) Public health and safety facilities	n/a	10%	1
(No response)	n/a	10%	1

RESULTS OF EED MODEL EVALUATION
GROUP 6 - MODEL G (cont'd)

	$\bar{x}$ Score	Percentage	n
8. In general, would your company or agency be affected if this model were implemented?			
Yes	n/a	90%	9
No	n/a	10%	1
9. In general, do you think this model <u>should be</u> developed and implemented?			
Yes	n/a	100%	10
No	n/a	0%	0
10. Compared to other EED models discussed at this conference, how would you rate this model on a scale of 1 to 5, with 1 meaning "worst" and 5 meaning "best"?			
1	n/a	10%	1
2	n/a	10%	1
4	n/a	30%	3
5	n/a	50%	5
11. Do you think this conference was an appropriate way of exploring the idea of an energy emergency district (EED)?			
Yes	n/a	90%	9
No	n/a	0%	0
(No response)	n/a	10%	1

RESULTS OF EED MODEL EVALUATION
GROUP 6 - MODEL G (cont'd)

	$\bar{x}$ Score	Percentage	n
12. In general, do you think *any* sort of an energy emergency district should be developed and implemented?			
Yes	n/a	70%	7
No	n/a	30%	3

DEMOGRAPHIC DATA

Expertise/Background		Sex		Age	
Small Power Producer	1	Males	7	$\bar{x}$	48.2
Local Emergency Response Provider	2	Females	2	Range	32-63
Federal Agency Representative	1	No Response	1	Range	32-63
County Emergency Coordinator	4				
Financial Expert	1				
State Agency Representative	1				

RESULTS OF EED MODEL EVALUATION

GROUP 7 - MODEL B/F/G
(n=8)

	$\bar{x}$ Score	Percentage	n
1. In your opinion, could this model perform the prescribed EED functions? Would you say that it was (Very Likely = 4, Not At All Likely = 1)?	2.5 = Likely	n/a	8
2. In your opinion, how useful would you say this model was with respect to enhancing the capabilities of: (Very Useful = 4, Not At All Useful = 1)			
a) Emergency services agencies	2.5 = Useful	n/a	7
	(No response)	n/a	1
b) City governments	2.5 = Useful	n/a	7
	(No response)	n/a	1
c) County governments	2.8 = Useful	n/a	7
	(No response)	n/a	1
d) Special districts (e.g., fire, water, sewage treatment, etc.)	1.6 = Somewhat Useful	n/a	4
	(No response)	n/a	4
e) State government	2.9 = Useful	n/a	7
	(No response)	n/a	1
f) Federal government	2.6 = Useful	n/a	7
	(No response)	n/a	1
g) Private and public energy utility companies	2.4 = Somewhat Useful	n/a	7
	(No response)	n/a	1
h) Small power producers	2.4 = Somewhat Useful	n/a	7
	(No response)	n/a	1

RESULTS OF EED MODEL EVALUATION
GROUP 7 - MODEL B/F/G (cont'd)

	$\bar{x}$ Score	Percentage	n
3. In your opinion, how feasible would you say this model is with respect to: (Very Feasible = 4, Not At All Feasible = 1)			
a) Political implementation (probability that too controversial to implement)	1.8 = Somewhat Feasible	n/a	6
	(No response)	n/a	2
b) Fiscal implementation (probability that proposed funding could be obtained)	2.1 = Somewhat Feasible	n/a	7
	(No response)	n/a	1
c) Legal implementation (under existing laws or new laws needed)	2.5 = Feasible	n/a	7
	(No response)	n/a	1
4. In your opinion, how likely is this model to be socially acceptable? (Very Likely = 4, Not At All Likely = 1)	2.6 = Likely	n/a	7
	(No response)	n/a	1
5. In your opinion, who would benefit if this model were implemented? (Check as many as apply.)			
a) City government	n/a	63%	5
b) County government	n/a	63%	5
c) Special districts (e.g., fire, water, sewage treatment, etc.)	n/a	63%	5
d) State government	n/a	63%	5
e) Federal government	n/a	50%	4
f) Private and public energy utility companies	n/a	38%	3
g) Small power producers	n/a	50%	4

RESULTS OF EED MODEL EVALUATION
GROUP 7 - MODEL B/F/G (cont'd)

	$\bar{x}$ Score	Percentage	n
5. (cont'd) In your opinion, who would benefit if this model were implemented? (Check as many as apply.)			
h) The citizenry living in the EED	n/a	63%	5
i) Critical facilities located in the EED	n/a	38%	3
j) Public health and safety facilities (e.g. hospitals, law enforcement, emergency communication centers, etc.)	n/a	75%	6
6. In your opinion, who would benefit the <u>most</u>?			
a) City government	n/a	13%	1
b) County government	n/a	13%	1
c) Special districts	n/a	13%	1
d) State government	n/a	25%	2
j) Public health and safety facilities	n/a	13%	1
(No response)	n/a	25%	2
7. In your opinion, who would benefit the <u>least</u>?			
e) Federal government	n/a	13%	1
g) Small power producers	n/a	50%	4
h) The citizenry living in the EED	n/a	25%	2
(No response)	n/a	13%	1

RESULTS OF EED MODEL EVALUATION
GROUP 7 - MODEL B/F/G (cont'd)

	$\bar{x}$ Score	Percentage	n
8. In general, would your company or agency be affected if this model were implemented?			
Yes	n/a	50%	4
No	n/a	25%	2
(No response)	n/a	25%	2
9. In general, do you think this model <u>should be</u> developed and implemented?			
Yes	n/a	75%	6
No	n/a	0%	0
(No response)	n/a	25%	2
10. Compared to other EED models discussed at this conference, how would you rate this model on a scale of 1 to 5, with 1 meaning "worst" and 5 meaning "best"?			
2	n/a	25%	2
3	n/a	13%	1
4	n/a	13%	1
5	n/a	50%	4
11. Do you think this conference was an appropriate way of exploring the idea of an energy emergency district (EED)?			
Yes	n/a	88%	7
No	n/a	12%	1

RESULTS OF EED MODEL EVALUATION
GROUP 7 - MODEL B/F/G (cont'd)

	$\bar{x}$ Score	Percentage	n
12. In general, do you think any sort of an energy emergency district should be developed and implemented?			
Yes	n/a	63%	5
No	n/a	37%	3

DEMOGRAPHIC DATA

Expertise/Background		Sex		Age	
Local Emergency Response Provider	2	Males	8	$\bar{x}$	55
City/County Administrator	1	Females	0	Range	40-71
Federal Agency Representative	1			No Response	1
Transit District Representative	1				
County Emergency Coordinator	2				
Policy/Legal/Theory Expert	1				

RESULTS OF EED MODEL EVALUATION

GROUP 8 - MODEL F
(n=10)

	$\bar{x}$ Score	Percentage	n
1. In your opinion, could this model perform the prescribed EED functions? Would you say that it was (Very Likely = 4, Not At All Likely = 1)?	3.4 = Likely	n/a	10
2. In your opinion, how useful would you say this model was with respect to enhancing the capabilities of: (Very Useful = 4, Not At All Useful = 1)			
a) Emergency services agencies	3.0 = Useful	n/a	10
b) City governments	2.4 = Somewhat Useful	n/a	10
c) County governments	2.9 = Useful	n/a	10
d) Special districts (e.g., fire, water, sewage treatment, etc.)	2.2 = Somewhat Useful	n/a	10
e) State government	3.1 = Useful	n/a	10
f) Federal government	2.3 = Somewhat Useful	n/a	10
g) Private and public energy utility companies	2.6 = Useful	n/a	10
h) Small power producers	2.2 = Somewhat Useful	n/a	10

RESULTS OF EED MODEL EVALUATION
GROUP 8 - MODEL F (cont'd)

	$\bar{x}$ Score	Percentage	n
3. In your opinion, how feasible would you say this model is with respect to: (Very Feasible = 4, Not At All Feasible = 1)			
a) Political implementation (probability that too controversial to implement)	3.2 = Feasible	n/a	10
b) Fiscal implementation (probability that proposed funding could be obtained)	2.8 = Somewhat Feasible	n/a	10
c) Legal implementation (under existing laws or new laws needed)	3.0 = Feasible	n/a	10
4. In your opinion, how likely is this model to be socially acceptable? (Very Likely = 4, Not At All Likely = 1)	2.6 = Likely	n/a	10
5. In your opinion, who would benefit if this model were implemented? (Check as many as apply.)			
a) City government	n/a	70%	7
b) County government	n/a	70%	7
c) Special districts (e.g., fire, water, sewage treatment, etc.)	n/a	30%	3
d) State government	n/a	90%	9
e) Federal government	n/a	80%	8
f) Private and public energy utility companies	n/a	50%	5
g) Small power producers	n/a	30%	3

RESULTS OF EED MODEL EVALUATION
GROUP 7 - MODEL B/F/G (cont'd)

	$\bar{x}$ Score	Percentage	n
5. (cont'd) In your opinion, who would benefit if this model were implemented? (Check as many as apply.)			
h) The citizenry living in the EED	n/a	50%	5
i) Critical facilities located in the EED	n/a	80%	8
j) Public health and safety facilities (e.g. hospitals, law enforcement, emergency communication centers, etc.)	n/a	80%	8
6. In your opinion, who would benefit the most?			
a) City government	n/a	10%	1
b) County government	n/a	10%	1
d) State government	n/a	30%	3
i) Critical facilities located in the EED	n/a	30%	3
(No response)	n/a	20%	2
7. In your opinion, who would benefit the least?			
f) Private and public energy utility companies	n/a	50%	5
g) Small power producers	n/a	20%	2
h) The citizenry living in the EED	n/a	20%	2
(No response)	n/a	10%	1

RESULTS OF EED MODEL EVALUATION
GROUP 8 - MODEL F (cont'd)

	$\bar{x}$ Score	Percentage	n
8. In general, would your company or agency be affected if this model were implemented?			
Yes	n/a	90%	9
No	n/a	10%	1
9. In general, do you think this model <u>should be</u> developed and implemented?			
Yes	n/a	70%	7
No	n/a	30%	3
10. Compared to other EED models discussed at this conference, *how would you* rate this model on a scale of 1 to 5, with 1 meaning "worst" and 5 meaning "best"?			
1	n/a	20%	2
3	n/a	10%	1
4	n/a	10%	1
5	n/a	60%	6
11. Do you think this conference was an appropriate way of exploring the idea of an energy emergency district (EED)?			
Yes	n/a	70%	7
No	n/a	30%	3

RESULTS OF EED MODEL EVALUATION
GROUP 8 - MODEL F (cont'd)

	$\bar{x}$ Score	Percentage	n
12. In general, do you think <u>any</u> sort of an energy emergency district should be developed and implemented?			
Yes	n/a	20%	2
No	n/a	80%	8

DEMOGRAPHIC DATA

<u>Expertise/Background</u>

Local Emergency Response Provider	2
County Emergency Coordinator	2
Policy/Legal/Theory Expert	1
Utility Operations Manager	3
State Agency Representative	1
Media/Public Info Officer	1

<u>Sex</u>

Males	8
Females	2

<u>Age</u>

$\bar{x}$	47
Range	34-63

A P P E N D I X

G

COLLABORATIVE PROBLEM SOLVING PROCESS

EVALUATION RESULTS

RESULTS OF COLLABORATIVE PROBLEM SOLVING
PROCESS EVALUATION

GROUP 1 - DAY 1 (n = 7)	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.6 = Strongly Agree	n/a	7
3. In small group session today, I thought there was enough time to discuss the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	3.0 = Agree	n/a	7
4. In small group session today, I found use of the "group memory" technique helpful. (Strongly Agree = 4, Strongly Disagree = 1)	3.7 = Strongly Agree	n/a	7
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	3.4 = Disagree	n/a	7
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.9 = Strongly Agree	n/a	7
7. Overall, I thought the small group process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	3.4 = Agree	n/a	7
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	3.6 = Strongly Agree	n/a	7

RESULTS OF PROCESS EVALUATION
GROUP 1 - DAY 1 (Cont'd)
(n = 7)

	$\bar{x}$ Score	Percentage	n
9. Compared to unfacilitated small group discussions I've participated in, I found today's session to be more productive. (Strongly Agree = 4, Strongly Disagree = 1)	3.7 = Strongly Agree	n/a	7
10. Overall, I thought the General Session process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	3.4 = Agree	n/a	7

RESULTS OF PROCESS EVALUATION
GROUP 1 - DAY 2
(n = 6)

	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	2.8 = Agree	n/a	6
3. In small group session today, I thought there was enough time to discuss the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	2.5 = Agree	n/a	6
4. In small group session today, I found use of the "group memory" technique helpful. (Strongly Agree = 4, Strongly Disagree = 1)	1.0 = Strongly Disagree	n/a	2
	No Opinion	n/a	4
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	2.3 = Agree	n/a	6
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.5 = Strongly Agree	n/a	6
7. Overall, I thought the small group process was effective in enabling the group to ask the hard questions of the EED models. (Strongly Agree = 4, Strongly Disagree = 1)	3.0 = Agree	n/a	6
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	3.4 = Agree	n/a	5
	(No response)	n/a	1
9. Involving the people who might be implementing or managing an EED increases the likelihood of its effective implementation. (Strongly Agree = 4, Strongly Disagree = 1)	2.6 = Agree	n/a	5
	(No response)	n/a	1

RESULTS OF PROCESS EVALUATION
GROUP 1 - DAY 2 (Cont'd)
(n = 6)

	$\bar{x}$ Score	Percentage	n
10. Overall, how would you rate the collaborative process? (Effective = 5, Ineffective = 1)	3.3 = Somewhat Effective	n/a	6
11. Prior to this conference, had you ever participated in a collaborative process meeting, workshop or conference, using trained facilitators and recorders?			
Yes	n/a	50%	3
No	n/a	50%	3

RESULTS OF PROCESS EVALUATION
GROUP 2 - DAY 1
(n = 10)

	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.7 = Strongly Agree	n/a	10
3. In small group session today, I thought there was enough time to discuss the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	2.7 = Agree	n/a	10
4. In small group session today, I found use of the "group memory" technique helpful (Strongly Agree = 4, Strongly Disagree = 1)	1.9 = Disagree No Opinion	n/a n/a	6 4
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	3.1 = Disagree	n/a	10
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.0 = Agree	n/a	10
7. Overall, I thought the small group process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	2.4 = Disagree	n/a	10
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics (Strongly Agree = 4, Strongly Disagree = 1)	2.9 = Agree	n/a	10

RESULTS OF PROCESS EVALUATION
GROUP 2 - DAY 1 (Cont'd)
(n = 10)

	$\bar{x}$ Score	Percentage	n
9. Compared to unfacilitated small group discussions I've participated in, I found today's session to be more productive. (Strongly Agree = 4, Strongly Disagree = 1)	2.9 = Agree	n/a	10
10. Overall, I thought the General Session process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	2.4 = Disagree	n/a	10

RESULTS OF PROCESS EVALUATION
GROUP 2 - DAY 2
(n = 13)

	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.4 = Agree	n/a	13
3. In small group session today, I thought there was enough time to discuss the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	2.9 = Agree	n/a	13
4. In small group session today, I found use of the "group memory" technique helpful. (Strongly Agree = 4, Strongly Disagree = 1)	2.9 = Agree	n/a	13
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	3.2 = Disagree	n/a	13
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	2.9 = Agree	n/a	13
7. Overall, I thought the small group process was effective in enabling the group to ask the hard questions of the EED models. (Strongly Agree = 4, Strongly Disagree = 1)	2.9 = Agree	n/a	13
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	3.3 = Agree	n/a	13
9. Involving the people who might be implementing an EED increases the likelihood of its effective implementation. (Strongly Agree = 4, Strongly Disagree = 1)	(No responses)	n/a	13

RESULTS OF PROCESS EVALUATION
GROUP 2 - DAY 2 (Cont'd)
(n = 13)

	$\bar{x}$ Score	Percentage	n
10. Overall, how would you rate the collaborative process? (Effective = 5, Ineffective = 1)	3.8 = Effective	n/a	13
11. Prior to this conference, had you ever participated in a collaborative process meeting, workshop or conference, using trained facilitators and recorders?			
Yes	n/a	54%	7
No	n/a	46%	6

RESULTS OF PROCESS EVALUATION
GROUP 3 - DAY 1
(n = 11)

Item	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.0 = Agree	n/a	11
3. In small group session today, I thought there was enough time to discuss the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	2.0 = Disagree	n/a	11
4. In small group session today, I found use of the "group memory" technique helpful. (Strongly Agree = 4, Strongly Disagree = 1)	2.0 = Disagree No Opinion	n/a n/a	7 4
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	2.8 = Disagree	n/a	11
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.4 = Agree	n/a	11
7. Overall, I thought the small group process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	3.1 = Agree	n/a	11
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	3.7 = Strongly Agree	n/a	11

RESULTS OF PROCESS EVLUATION
GROUP 3 - DAY 1 (Cont'd)
(n = 11)

	$\bar{x}$ Score	Percentage	n
9. Compared to unfacilitated small group discussions I've participated in, I found today's session to be more productive. (Strongly Agree = 4, Strongly Disagree = 1)	2.8 = Agree	n/a	11
10. Overall, I thought the General Session process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	2.6 = Agree	n/a	11

RESULTS OF PROCESS EVALUATION
GROUP 3 - DAY 2
(n = 13)

	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.6 = Strongly Agree	n/a	13
3. In small group session today, I thought there was enough time to discuss the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	2.6 = Agree	n/a	13
4. In small group session today, I found use of the "group memory" technique helpful. (Strongly Agree = 4, Strongly Disagree = 1)	3.2 = Agree	n/a	13
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	2.8 = Disagree	n/a	13
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	2.5 = Agree	n/a	13
7. Overall, I thought the small group process was effective in enabling the group to ask the hard questions of the EED models. (Strongly Agree = 4, Strongly Disagree = 1)	3.2 = Agree	n/a	13
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	3.9 = Strongly Agree	n/a	13
9. Involving the people who might be implementing or managing an EED increases the likelihood of its effective implementation. (Strongly Agree = 4, Strongly Disagree = 1)	3.1 = Agree	n/a	12
	(No response)	n/a	1

RESULTS OF PROCESS EVALUATION
GROUP 3 - DAY 2 (Cont'd)
(n = 13

	$\bar{x}$ Score	Percentage	n
10. Overall, how would you rate the collaborative process? (Effective = 5, Ineffective = 1)	3.6 = Effective	n/a	13
11. Prior to this conference, had you ever participated in a collaborative process meeting, workshop or conference, using trained facilitators and recorders?			
Yes	n/a	62%	8
No	n/a	38%	5

RESULTS OF PROCESS EVALUATION

GROUP 4 - DAY 1

(n = 13)

	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.7 = Strongly Agree	n/a	13
3. In small group session today, I thought there was enough time to discuss the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	2.1 = Disagree	n/a	13
4. In small group session today, I found use of the "group memory" technique helpful. (Strongly Agree = 4, Strongly Disagree = 1)	2.9 = Agree	n/a	13
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	3.3 = Disagree	n/a	13
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	2.4 = Disagree	n/a	13
7. Overall, I thought the small group process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	2.2 = Disagree	n/a	13
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	3.1 = Agree	n/a	13

RESULTS OF PROCESS EVALUATION
GROUP 4 - DAY 1 (Cont'd)
(n = 13)

	$\bar{x}$ Score	Percentage	n
9. Compared to unfacilitated small group discussions I've participated in, I found today's session to be more productive. (Strongly Agree = 4, Strongly Disagree = 1)	2.8 = Agree	n/a	13
10. Overall, I thought the General Session process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	2.6 = Agree	n/a	13

RESULTS OF PROCESS EVALUATION

GROUP 4 - DAY 2

(n = 13)

	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.1 = Agree	n/a	13
3. In small group session today, I thought there was enough time to discuss the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	2.5 = Agree	n/a	13
4. In small group session today, I found use of the "group memory" technique helpful. (Strongly Agree = 4, Strongly Disagree = 1)	2.5 = Agree	n/a	13
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	2.8 = Disagree	n/a	13
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	1.9 = Disagree	n/a	13
7. Overall, I thought the small group process was effective in enabling the group to ask the hard questions of the EED models. (Strongly Agree = 4, Strongly Disagree = 1)	3.2 = Agree	n/a	13
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	3.5 = Strongly Agree	n/a	13
9. Involving the people who might be implementing an or managing an EED increases the likelihood of its effective implementation. (Strongly Agree = 4, Strongly Disagree = 1)	3.6 = Strongly Agree	n/a	10
	(No response)	n/a	3

RESULTS OF PROCESS EVALUATION
GROUP 4 - DAY 2 (Cont'd)
(n = 13)

	$\bar{x}$ Score	Percentage	n
10. Overall, how would you rate the collaborative process? (Effective = 5, Ineffective = 1)	3.8 = Effective	n/a	12
	(No response)	n/a	1
11. Prior to this conference, had you ever participated in a collaborative process meeting, workshop or conference, using trained facilitators and recorders?			
Yes	n/a	69%	9
No	n/a	31%	4

RESULTS OF PROCESS EVALUATION
GROUP 5 - DAY 1
(n = 10)

	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.4 = Agree Agree	n/a	10
3. In small group session today, I thought there was enough time to discuss the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	2.2 = Disagree	n/a	10
4. In small group session today, I found use of the "group memory" technique helpful. (Strongly Agree = 4, Strongly Disagree = 1)	2.0 = Disagree No Opinion	n/a n/a	6 4
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	3.2 = Agree	n/a	10
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.6 = Strongly Agree	n/a	10
7. Overall, I thought the small group process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	2.6 = Agree	n/a	10
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics (Strongly Agree = 4, Strongly Disagree = 1)	3.0 = Agree	n/a	10

RESULTS OF PROCESS EVALUATION
GROUP 5 - DAY 1 (Cont'd)
(n = 10)

	$\bar{x}$ Score	Percentage	n
9. Compared to unfacilitated small group discussions I've participated in, I found today's session to be more productive. (Strongly Agree = 4, Strongly Disagree = 1)	2.5 = Agree	n/a	10
10. Overall, I thought the General Session process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	2.5 = Agree	n/a	10

RESULTS OF PROCESS EVALUATION
GROUP 5 - DAY 2
(n = 9)

	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.1 = Agree	n/a	9
3. In small group session today, I thought there was enough time to discuss the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	2.0 = Disagree	n/a	9
4. In small group session today, I found use of the "group memory" technique helpful. (Strongly Agree = 4, Strongly Disagree = 1)	3.1 = Agree	n/a	9
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	3.1 = Agree	n/a	9
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.2 = Agree	n/a	9
7. Overall, I thought the small group process was effective in enabling the group to ask the hard questions of the EED models. (Strongly Agree = 4, Strongly Disagree = 1)	2.9 = Agree	n/a	9
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	3.4 = Agree	n/a	9
9. Involving the people who might be implementing or managing an EED increases the likelihood of its effective implementation. (Strongly Agree = 4, Strongly Disagree = 1)	3.7 = Strongly Agree	n/a	7
	(No response)	n/a	2

RESULTS OF PROCESS EVALUATION
GROUP 5 - DAY 2 (Cont'd)
(n = 9)

	$\bar{x}$ Score	Percentage	n
10. Overall, how would you rate the collaborative process. (Effective = 5, Ineffective = 1)	2.9 = Somewhat Effective	n/a	7
	(No response)	n/a	2
11. Prior to this conference, had you ever participated in a collaborative process meeting, workshop or conference, using trained facilitators and recorders?			
Yes	n/a	33%	3
No	n/a	56%	5
(No response)	n/a	11%	1

RESULTS OF PROCESS EVALUATION
GROUP 6 - DAY 1
(n = 14)

	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.6 = Strongly Agree	n/a	14
3. In small group session today, I thought there was enough time to discuss the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	2.1 = Disagree	n/a	14
4. In small group session today, I found use of the "group memory" technique helpful. (Strongly Agree = 4, Strongly Disagree = 1)	1.7 = Disagree	n/a	7
	No Opinion	n/a	6
	(No response)	n/a	1
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	3.2 = Disagree	n/a	14
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	2.7 = Agree	n/a	14
7. Overall, I thought the small group process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	1.9 = Disagree	n/a	10
	No Opinion	n/a	4
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	3.1 = Agree	n/a	14

RESULTS OF PROCESS EVALUATION
GROUP 6 - DAY 1 (Cont'd)
(n = 14)

	$\bar{x}$ Score	Percentage	n
9. Compared to unfacilitated small group discussions I've participated in, I found today's session to be more productive. (Strongly Agree = 4, Strongly Disagree = 1)	2.8 = Agree Agree	n/a	14
10. Overall, I thought the General Session process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	2.5 = Agree	n/a	14

RESULTS OF PROCESS EVALUATION
GROUP 6 - DAY 2
(n = 10)

Item	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.6 = Strongly Agree	n/a	10
3. In small group session today, I thought there was enough time to discuss the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	3.0 = Agree	n/a	10
4. In small group session today, I found use of the "group memory" technique helpful. (Strongly Agree = 4, Strongly Disagree = 1)	2.9 = Agree	n/a	10
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	2.9 = Disagree	n/a	10
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	2.8 = Agree	n/a	10
7. Overall, I thought the small group process was effective in enabling the group to ask the hard questions of the EED models. (Strongly Agree = 4, Strongly Disagree = 1)	3.3 = Agree	n/a	10
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	2.7 = Agree	n/a	10
9. Involving the people who might be implementing or managing an EED increases the likelihood of its effective implementation (Strongly Agree = 4, Strongly Disagree = 1)	3.5 = Strongly Agree	n/a	10

RESULTS OF PROCESS EVALUATION
GROUP 6 - DAY 2 (Cont'd)
(n = 10)

	$\bar{x}$ Score	Percentage	n
10. Overall, how would you rate the collaborative process? (Effective = 5, Ineffective = 1)	3.7 = Effective	n/a	10
11. Prior to this conference, had you ever participated in a collaborative process meeting, workshop or conference, using trained facilitators and recorders?			
Yes	n/a	50%	5
No	n/a	50%	5

RESULTS OF PROCESS EVALUATION
GROUP 7 - DAY 1
(n = 8)

	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.6 = Strongly Agree	n/a	8
3. In small group session today, I thought there was enough time to discuss the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	1.8 = Disagree	n/a	8
4. In small group session today, I found use of the "group memory" technique helpful. (Strongly Agree = 4, Strongly Disagree = 1)	3.0 = Agree	n/a	8
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	2.8 = Disagree	n/a	8
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.0 = Agree	n/a	8
7. Overall, I thought the small group process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	2.5 = Agree	n/a	8
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics (Strongly Agree = 4, Strongly Disagree = 1)	2.8 = Agree	n/a	8

RESULTS OF PROCESS EVALUATION
GROUP 7 - DAY 1 (Cont'd)
(n = 8)

	$\bar{x}$ Score	Percentage	n
9. Compared to unfacilitated small group discussions I've participated in, I found today's session to be more productive. (Strongly Agree = 4, Strongly Disagree = 1)	3.3 = Agree	n/a	8
10. Overall, I thought the General Session process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	2.4 = Disagree	n/a	8

RESULTS OF PROCESS EVALUATION
GROUP 7 - DAY 2
(n = 8)

	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.1 = Agree	n/a	8
3. In small group session today, I thought there was enough time to discuss the agenda topics. Strongly Agree = 4, Strongly Disagree = 1)	2.0 = Disagree	n/a	8
4. In small group session today, I found use of the "group memory" technique helpful. (Strongly Agree = 4, Strongly Disagree = 1)	2.0 = Disagree	n/a	8
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	3.0 = Disagree	n/a	8
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.0 = Agree	n/a	8
7. Overall, I thought the small group process was effective in enabling the group to ask the hard questions of the EED models. (Strongly Agree = 4, Strongly Disagree = 1)	2.9 = Agree	n/a	8
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	3.0 = Agree	n/a	8
9. Involving the people who might be implementing or managing an EED increases the likelihood of its effective implementation. (Strongly Agree = 4, Strongly Disagree = 1)	3.0 = Agree (No response)	n/a n/a	2 6

RESULTS OF PROCESS EVALUATION
GROUP 7 - DAY 2 (Cont'd)
(n = 8)

	$\bar{x}$ Score	Percentage	n
10. Overall, how would you rate the collaborative process? (Effective = 5, Ineffective = 1)	3.7 = Effective	n/a	7
	(No response)	n/a	1
11. Prior to this conference, had you ever participated in a collaborative process meeting, workshop or conference, using trained facilitators and recorders?			
Yes	n/a	50%	4
No	n/a	38%	3
(No response)	n/a	12%	1

RESULTS OF PROCESS EVALUATION
GROUP 8 - DAY 1
(n = 11)

	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.6 = Strongly Agree	n/a	11
3. In small group session today, I thought there was enough time to discuss the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	2.5 = Agree	n/a	11
4. In small group session today, I found use of the "group memory" technique helpful. (Strongly Agree = 4, Strongly Disagree = 1)	2.3 = Disagree No Opinion	n/a n/a	7 4
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	3.3 = Disagree	n/a	11
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.2 = Agree	n/a	11
7. Overall, I thought the small group process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	3.2 = Agree	n/a	11
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	3.3 = Agree	n/a	11

RESULTS OF PROCESS EVALUATION
GROUP 8 - DAY 1 (Cont'd)
(n = 11)

	$\bar{x}$ Score	Percentage	n
9. Compared to unfacilitated small group discussions I've participated in, I found today's session to be more productive. (Strongly Agree = 4, Strongly Disagree = 1)	3.3 = Agree	n/a	11
10. Overall, I thought the General Session process was effective in narrowing the number of EED models to be considered the next day. (Strongly Agree = 4, Strongly Disagree = 1)	3.0 = Agree	n/a	11

RESULTS OF PROCESS EVALUATION
GROUP 8 - DAY 2
(n = 10)

	$\bar{x}$ Score	Percentage	n
2. In small group session today, I thought the facilitator was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.7 = Strongly Agree	n/a	10
3. In small group session today, I thought there was enough time to discuss the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	3.1 = Agree	n/a	10
4. In small group session today, I found use of the "group memory" technique helpful. (Strongly Agree = 4, Strongly Disagree = 1)	2.9 = Agree	n/a	10
5. In small group session today, I thought the facilitator let the group stray too far from the agenda topics. (Strongly Agree = 1, Strongly Disagree = 4)	3.4 = Disagree	n/a	10
6. In small group session today, I thought the recorder was effective in helping the group work together. (Strongly Agree = 4, Strongly Disagree = 1)	3.6 = Strongly Agree	n/a	10
7. Overall, I thought the small group process was effective in enabling the group to ask the hard questions of the EED models. (Strongly Agree = 4, Strongly Disagree = 1)	3.3 = Strongly Agree	n/a	10
8. In small group session today, I found it helpful to talk with people from outside my area of expertise about the agenda topics. (Strongly Agree = 4, Strongly Disagree = 1)	3.6 = Strongly Agree	n/a	10
9. Involving the people who might be implementing or managing an EED increases the likelihood of its effective implementation. (Strongly Agree = 4, Strongly Disagree = 1)	3.6 = Strongly Agree	n/a	10

RESULTS OF PROCESS EVALUATION
GROUP 8 - DAY 2 (Cont'd)
(n = 10)

	$\bar{x}$ Score	Percentage	n
10. Overall, how would you rate the collaborative process? (Effective = 5, Ineffective = 1)	3.5 = Effective	n/a	10
11. Prior to this conference, had you ever participated in a collaborative process meeting, workshop or conference, using trained facilitators and recorders?			
Yes	n/a	50%	5
No	n/a	50%	5

A P P E N D I X

H

ENERGY EMERGENCY DISTRICT MODELS

GENERAL COMMENTS

RESULTS OF EED MODEL EVALUATION

EVALUATION GENERAL COMMENTS
ON EED MODEL CONCEPT

GROUP 1

* Do not feel a separate district as such is the answer. A line of communication relative to what is in place within the utility providers, such as PG&E, etc., would be helpful for local jurisdiction so planning can be accomplished.

* Not as a separate district, but the functions identified should be implemented through existing channels/organizations. Particularly, the resources and plans should be shared between public and private resources and responders.

* No district but a process to address the functions without establishing a new structure.

* Not required to accomplish goal and further creates an organizational structure that will get bogged down in political, legal and economic problems.

* Energy is a statewide commodity involving technical expertise. Where it can be localized (source-to-need) a "district" evolves.

GROUP 2

* I believe that by using what is now in existence the problem can be handled.

* The whole premise that the existing OES mutual aid regions provide the optimum structure to implement the prescribed functions of an EED is highly questionable, given historic/political/organizational realities.

* With emphasis on local response and energy diversity.

* There needs to be one entity responsible for coordinating the disaster repair work.

* I am glad the issue is being addressed for it has been a concern of mine as a county disaster planner. I ask myself "how and where are we going to get those energy resources we need in disaster"?

* Not districts but a management agency for mutual aid districts.

* An integrated energy response is needed but must be worked through centralized agency, not a number of competing agencies.

* Not as a "district" but a management scheme, process, capability.

* Within the modified definition of an EED, and using existing political structures (i.e., no new organizations)

* We need to plan for all major problems in order to protect life and property.

* It was fairly apparent that there is a gap in overall emergency response "system" and little knowledge or responsibility of current state/county emergency response personnel in the energy emergency area. I think bridging this gap by either a new entity or, more favorably, adding functions to an existing entity or entities would serve to strengthen entire emergency response network.

GROUP 3

* If properly thought out and thoroughly discussed before implementation, something that most closely adheres to the existing energy emergency response system will have the highest chance for success.

* Someone needs the legal basis and funding to do the functions.

* IMPORTANT POINT - The legal authorities and the data exist now but are scattered among many institutions. There is a definite need for an integrated communication system to be created and activated, and for a comprehensive energy emergency strategy to be established.

* Need to focus on alternative energy sources and their uses in some later process.

* Of specific concern are initiatives that could potentially evolve from this conference such as increased data collection and reporting requirements by the petroleum industry, forced stockpiling in the private sector, and identification of priority end users at other than the state level.

* But only with refinements to increase knowledge of and access to local, neighborhood resources. The essential role of individuals and neighborhoods in the event of a major catastrophe -- and the role of alternative dispersed energy sources in this -- was virtually ignored in this conference. Utilities and traditional, government units can't respond effectively when their energy, transportation, and communications systems fail. Response units in a catastrophe will be smaller, and their energy needs were barely addressed here. At a minimum, the public should be informed that traditional entities cannot be relied on to "rescue" people -- and the public in general needs to be encouraged to promote and support local energy generation, production sources. Inadequate focus on contribution of alternate energy and dispersed resources.

* Use existing systems, but implement better, educate and train, exchange information.

* NOTE Group 3 clarified boundary statement to say "mutual aid regions" only in the context they are part of the existing statewide mutual aid system. In effect, the clarification changed the boundary to the state itself as the largest element (boundary) in the statewide mutual aid system. All answers on this questionnaire are based on the above

clarification. See a need for better utilizing existing systems and authorities. See a need for improved information exchange and coordination. Recommend establishment of a single point of contact at the state level to provide emergency energy-related information.

* See a need for improved education about existing plans and relationships. Recommend establishment of education programs such as simulation exercises involving all parties (producers, regulators, emergency planners, end users, etc.).

* Fail to see sufficient justification for new or additional agencies or systems, and accordingly recommend against their establishment.

  Need more interaction among all currently involved agencies. Need marriage - or improved marriage - of activities separately performed by PUC and Energy Commission and OES.

* I don't "buy in" to EED. Our group and I want existing emergency response and solutions systems to be used and strengthened as necessary.

* - Existing structures appear capable of handling the tasks
  - Need more effort and support
  - Better sharing, dissemination of info

* Those functions identified as the responsibility of an EED should be superimposed upon the existing state mutual aid system. I believe that it was established that no need exists to establish EEDs and that the functions envisioned for those EEDs, if established, can be done by existing mutual aid system.

* Additionally, it was established that there needs to be better exchange of information and implementation of training and exercises addressing energy emergencies.

* I feel that the private sector independent energy producers were insufficiently represented at this conference.

* There was not enough time to address the subject of alternative energy.

* The need and the framework should be structured to be implemented with existing state emergency services framework.

* - Another level of government is not required.
  - Work within existing state system.

* Should be incorporated into existing system.

GROUP 4

* I'm concerned about duplication - county emergency offices may be better tool.

* The concept is valid, the need is real.

* Should be added to OES plans

* The existing relationships between cities, counties and OES directing, and the need for flexible regional boundaries (and response) to cope with the size of the disaster couples with diffuse utility (and other energy producer) boundaries, rule out an effective EED on a fixed regional basis (other than at a statewide level).

* Existing system works, do not need new level or control.

* It must use what is already in place before anything new is added. It also should emphasize unity of command of the emergency responders.

* Discussions pointed out that while emergency planning may be well advanced, little attention has been paid to energy emergency planning.

* Not as a separate structure but as a function which needs to be part of emergency preparedness.

* I feel it would be more appropriate to build on existing systems.

GROUP 5

* This is a very important issue that needs to be dealt with.

* The need is obvious. Planning in this area has been limited except on local basis.

* Creates an additional governmental entity to deal with an ill-defined (how large is the emergency?) problem from the standpoint of scope, notwithstanding the question of probability of occurrence.

* I believe it needs to be a system, not a district. And also think it needs to cover the recovery period as well as preparedness and emergency response. Planning needs to be performed at the local level by those who will implement. More emphasis on local alternative energy provided.

* I really don't know! I did not learn enough from those (county people mainly) who are on the front line in an emergency about what are their needs and resources available. I guess everyone can always use more.

* Job not being done--existing organization not able. Link between producers and suppliers need to be set up. Pre- agreements where possible.

* A need clearly exists for a cohesive structure to provide energy resources in the event of a major disruption due to an emergency or other event.

GROUP 6

* Place this task to county OES.

* I think this would be a useful component to have in addition to current availble disaster plans.

* Need to have mechanism for government bodies to respond.

* Existing system can be made to accommodate federal, state, local needs.

* I think our concept with OES handling the response is very appropriate. A separate EED is not necessary.

* Emergency energy needs must be addressed sometime, some place, thru some vehicle whether district or other model.

* System/mechanism - yes; District - no

* Yes, but not a new-fangled district

GROUP 7

* It appears to be a necessity for a better coordination of resources through a more comprehensive use of mutual aid.

* Develop existing structure to handle, mandate if necessary, fund as required with energy tax or ?.

* - Hang-up with "district"
  - Do need examination of shortfalls in current system, however.

* The plan is necessary--the model is virtually in place, i.e., Mutual Aid Agreement and Emergency Services Act.

* It should incorporate existing organizations and not create a new organization.

* Energy should be considered as part of an existing emergency plan.

* Because, districts are unnecessary for such as this. There are other better ways of handling subject.

* We need answers to energy distribution problems before (develop plans) and when disasters strike.

GROUP 8

* No need for it--coordination at a statewide level with flexibility to handle emergencies with differing parameters and boundaries is strength of plan F.

* All the facilities, personnel, equipment, and training are in effect now to respond to an emergency. Possibly some additional education would be beneficial between the energy suppliers and government.

* We (state) need it now not only for energy but for all areas of emergency response.

* Development overdue--training, coordination, planning, cooperation, understanding are musts if we are to cope with emergencies both large and small.

* System works well as it now exists.

* New system not needed. Should enhance existing systems, particularly with respect to communications and coordination and training. No new entity needed!

* We were all here to develop a recommendation as to the best EEMC (no EED)

* Believe present system is adequate. Believe more focus should be given energy priorities, however this should be tempered by the knowledge that many other elements of disaster planning will have a higher priority.

* No, not unless the EED is workable, otherwise major problems would arise.

* "District" is not a good term.

A P P E N D I X

I

ENERGY EMERGENCY DISTRICTS

ADVISORS' PRELIMINARY MODELS

(In Order Received)

State of California
GOVERNOR'S OFFICE
SACRAMENTO, CA 95814

GEORGE DEUKMEJIAN
GOVERNOR

TELEPHONE
(916) 445-2841

June 21, 1984

RECEIVED JUN 22

Ms. Robyn Boyer Stewart, Project Director
Energy & Emergency Preparedness Project
1215 15th Street, 2nd Floor
Sacramento, California 95814

Re: Proposed E.E.D. Model

Dear Ms. Stewart:

In response to your letter of June 18, 1984, I submit the following proposals for your consideration:

1. Geographic Boundaries

I propose that the State of California be divided into five energy and emergency preparedness areas. Area #1 would be headquartered in Redding and be responsible for all of Northern California from Redding to the Oregon Border. Area #2 would be headquartered in Sacramento and control the area north to Redding. San Francisco, Marin, Santa Clara, Alameda and Contra Costa Counties would be a separate district known as Area #3. The area from Sacramento south to Gorman would be Area #4. Santa Barbara would be included in this area. The final area would be all the land south of Gorman to include Los Angeles and San Diego.

2. Administrative Considerations

The administration of each district should be handled by a board of directors composed of one member from the County Board of Supervisors of each member county, one representative of the Sheriff's Department of each member county; one representative of all utilities represented in the member counties; one representative for all fire departments and public hospitals. An independent, full time director, chosen by O.E.S. should be in charge with final decision making authority.

3. Funding

I propose that all California residents pay a 1% tax on all utility bills which would be used for funding the energy districts. This would of course have to be cleared with the P.U.C.

4. <u>Function of EED; What it Manages</u>

I feel these two areas are interconnected and will therefore treat both issues at this time.

The EED should manage distribution of energy, food, water and disaster relief, as an "on-site" extension of O.E.S. Before a disaster, the district director and his full time staff should conduct mandatory interagency training for all emergency responders in his district. Failure to cooperate or take part in such training should result in a $1,000/day fine for each day of nonparticipation. This remedy would require the support of the Legislature but may be easily obtained in light of the Coalinga disaster.

At the direction of the Governor and pursuant to his powers as outlined in California Government Code section 8550 et seq., the Governor should give the order to activate an EED. The O.E.S. would then take charge and support the EED as needed while providing the necessary up-dates to the Governor. The O.E.S. should determine when the situation has abated to the point where local county government can appropriately take control. The decision of the O.E.S. as to relinquishing control from the EED to local county government will be final and not open to review.

5. <u>Scope of Disaster and Time Frame to Handle</u>

Again, I feel both these aspects are interrelated. To activate an EED, as I have already suggested in #4 <u>supra</u>, the Governor should make this decision. The decision to terminate the control of the EED should be made by O.E.S.

6. <u>Communication Capability and Transportation</u>

The EED director should be able to requisition CARNG communication equipment with Guard personnel to operate and support such equipment. The EED director should also be able to requisition Cal-Trans/CARNG equipment and personnel as needed.

7. <u>Legal Authority of a District</u>

The EED, as I have conceived of it, will have far-reaching and wide-ranging powers that will cross many jurisdictions. I envision the EED director to be similar to a "military governor" in power when the Governor has ordered him to take command. Therefore, the EED and its employees, agents, etc., should enjoy <u>sovereign immunity</u> for the duration of the disaster.

I hope that my suggestions will be of some help to you. Quite honestly, when one suggests an entity with cross-jurisdictional authority such as my proposed EED model, the effect is similar to sticking your head into a beehive. As I said at our last meeting, the local politicians want to grab all the good press possible as the "savior" of the disaster victims. The reality of the situation is that in an 8.3 quake or terrorist strike along the Sierra at P.G.&E. generating plants, someone will have to make quick decisions that will effect many Californians. That someone needs to have all available resources for aid at his or her fingertips. Good press coverage will be irrelevant at that point in time.

I look forward to our next meeting and our October conference.

Sincerely,

Mike McGuire

Mike McGuire
Deputy Legal Affairs Secretary

sf

SHERIFF'S DEPARTMENT • COUNTY OF ALAMEDA

REC'D
JUN 28 1984

GLENN DYER
SHERIFF

COURTHOUSE
1225 FALLON STREET
OAKLAND, CALIFORNIA 94612
(415) 874-6646

June 22, 1984

Ms. Robyn Boyer Stewart
Project Director
Energy and Emergency Preparedness Project
1215 15th Street
2nd Floor
Sacramento, CA 95814

Based on your letter dated June 18, 1984, the following represents my perceptional views on the composition and functional framework of the above model.

Energy Emergency Districts, by geographical and political design, should logically follow county lines, thereby utilizing existing government sub-structure, allowing for delegated local control, autonomy, and administration, with established lines of authority providing a direct link to the executive branch of state government under the state-wide configuration of the California Law Enforcement Mutual Aid Plan. This would obviate the need for creation of a new entity, possibly overlapping or realigning existing political subdivisions, and lessen the chance of conflict and legal challenge inherent in such a move.

By definition, the administration of Energy Emergency Districts most properly should rest with local disaster offices aided and advised by the State Office of Emergency Services. Provisions for funding shall be forthcoming at the federal or state level to insure a uniform allocation and distribution of financial resource, dedicated, and not subject to local priorization.

Functionally, Energy Emergency District responsibilities should be concerned with pre-disaster planning, providing for identification, inventory, storage, and distribution of energy resources in the event of disaster regardless of type, origin, or magnitude. Implementation of such planning, if necessary, would be dependent on the situational circumstances arriving from such an occurrence in terms of severity, affected area(s) of involvement, and the resource capability necessary to ensure a short and long-range recovery effort. Primarily, Energy Emergency planning should provide for use of local resource, alternative sources, and provisions for allocated distribution of energy supply. Secondarily, planning should include a delivery system to allow export or importation of energy resources, area, region, or statewide as may be necessary to effect immediate disaster relief.

Expansion of the responsibility currently vested in the State Office of Emergency Services under the California Emergency Services Act to include management of energy emergency resources with application of concurrent responsibility to county government, would provide for the operational and legal authority necessary to achieve this model. Further consideration, at a later date, could encompass other life-sustaining resources necessarily critical to disaster management.

I hope this can be of some assistance to the project and appreciate the opportunity to participate.

Glenn Dyer
Sheriff

Dan Vohl

D. T. Vohl
Undersheriff

DTV/daa:1370I

COUNTY OF SONOMA

OFFICE OF EMERGENCY SERVICES

RECD JUL 2 1984

DIVISION OF GENERAL SERVICES

600 ADMINISTRATION DRIVE
SANTA ROSA, CALIFORNIA
95401

TELEPHONE (707) 527-2361

MICHAEL A. CHRYSTAL
General Services Director
Phone (707) 527-2977

LEONARD WHORTON
DIRECTOR OF EMERGENCY SERVICES

LOUIS PETERKA
EMERGENCY SERVICES COORDINATOR

June 24, 1984

Project Director
Energy and Emergency Preparedness Project
1215 15th Street, 2d Floor
Sacramento, CA 95814

Dear Director Stewart,

In response to your letter of June 19, 1984, requesting that I review the qualities or parameters of an Energy Emergency District and furnish my ideas regarding the organization and direction of an EED, the following comments are provided:

Ideally the EED should be incorporated into an existing organization so as to preclude the establishment of additional bureaucratic organizations or agencies which tend to begin operations at square one, become burdensome and costly, and generally proceed to "reinvent the wheel". The concept that we must plan for the eventual and probable emergency involving energy sources is nothing new, in fact, it is and has been a major concern of all agencies involved in emergency planning. The Governor's Earthquake Preparedness Task Force saw this as one of the major problem areas to be addressed in earthquake preparedness.

My recommendation is that this project be closely integrated into the efforts of the State Office of Emergency Services, particularly since that office has a sub-element involved in "Utilities". Geographically, EED boundries should coincide with the existing OES Regional boundries, since the planning effort and response coordination for all other services and commodities are coordinated by these regional offices. Funding should be incorporated into the OES funding mechanism, augmented through State and Federal agencies (FEMA).

I would strongly recommend against forming another agency or agencies to become involved in emergency planning, since the planning for disasters must necessarily be an intergrated effort. To introduce new and/or additional agencies into this process will be costly and grossly ineffective. There exists throughout the state a network of emergency management offices whose responsibility it is to manage all aspects emergency planning and response, to include mitigation, preparedness, response and recovery. These agencies/offices are presently addressing the energy emergency preparedness problems to some degree, along with all the other elements of disaster planning. The provision of additional resources and funding to these existing offices/agencies will greatly enhance the effort presently underway and should be decidedly more cost effective.

Director Robyn Stewart
June 24, 1984
Page 2

If questions arise regarding my comments, please feel free to contact me for further explanation or clarification.

Sincerely,

L. "PETE" PETERKA
Emergency Services Coordinator

c.c. State Office of Emergency Services
OES Regional Manager, Region II

Assembly California Legislature

RECD JUL 2 1984

State Capitol
Sacramento 95814
(916) 445-0424

Peter Hansel
Senior Consultant

Joshua Newman
Associate Consultant

Patricia Ramsey
Associate Consultant

Antonia Carrillo-McCabe
Committee Secretary

ASSEMBLY COMMITTEE ON ECONOMIC DEVELOPMENT AND NEW TECHNOLOGIES

SAM FARR
Chairman

June 26, 1984

Robyn Boyer Stewart
Project Director
Energy and Emergency Preparedness Project
1215 15th Street
Sacramento, California 95814

Dear Robyn:

I am not sure exactly what you want by my "idea" of an EED, but here's my best:

An EED is a distinct geographic entity whose boundaries correspond both to energy supply boundaries as well as energy consumption patterns. A particular area with a high concentration of certain manufacturing operations might warrant its own EED, for example. Also, an EED should correspond as much as possible to existing emergency planning administrative units so as to reduce coordination problems.

I see the main function of an EED to be in planning and preparation. Without these, there is no capability to respond after a disaster. In the event of a disaster, the normal disaster coordinating entity should utilize the energy resources which the EED has identified and prepared.

An EED should manage strictly energy resources, rather than food, water and the like.

I imagine that one of the first systems to go down in a disaster is communications. Hence, an EED should place a high priority on "powering" communications systems to the front-line emergency response networks.

Robyn, I hope this helps. Let me know what else I may do to assist.

Sincerely,

Sam Farr by Joshua Newman

SAM FARR
Chairman

SF:jnt

STATE OF CALIFORNIA—THE RESOURCES AGENCY

GEORGE DEUKMEJIAN, *Governor*

DEPARTMENT OF WATER RESOURCES
P.O. BOX 388
SACRAMENTO
95802

June 28, 1984

Ms. Robyn Boyer Stewart
Project Director
Energy and Emergency Preparedness Project
1215 15th Street, Second Floor
Sacramento, CA 95814

Dear Ms. Stewart:

Energy Emergency Districts Model Ideas

In response to your letter of June 19, 1984, the following are my ideas for a model based on the qualities which you provided.

Utilities currently have a good grasp of which areas can be isolated (islanded) from the rest of the system during times of emergency. For example, each major control area; i.e., Pacific Gas and Electric Company, Southern California Edison Company, Los Angeles Department of Water and Power, and San Diego Gas & Electric can island their systems from the rest of the western grid. Within each individual control area, there already exists the ability to island subareas on a priority basis. Most of this islanding is done automatically by computer control and service is only restored when adequate transmission of generation exists. It would be difficult if not impossible to identify exactly which subareas are served by individual generation as the distribution systems are generally so complex it is difficult to identify each connection to a specific subarea.

The scope of the disaster would have to be awesome as the loss of any single primary transmission or generation, even units as large as San Onofre or Diablo Canyon, can be handled under existing emergency procedures. Therefore, we must assume that a significant number, say more than 5, generation units are taken out simultaneously, that all interconnections are disrupted and that it was impossible to import power from other control areas within 48 hours. This would take the problem beyond the scope of existing emergency plans.

If it is absolutely necessary to provide service to some essential functions such as military, police, hospitals, sanitation, etc., it may be required to provide isolated

service from one or more specific points of generation to that essential service. To insure reliability, this independent service would have to be from more than one source which would be expensive and physically difficult to install. The problem grows in magnitude as the size of the urban area increases. Smaller towns or rural areas with few interconnections and their own generation would be easier to electrically isolate and retain some semblance of service to the community.

The isolation of smaller generation units from the existing utility grids to provide specific services such as pumping water, providing heat and electricity and operating equipment in a specific building or block may be desirable. In other words, small generation units may serve as emergency hubs and the essential needs would have to come to the areas where electric power was available. This would assume the entire distribution system was not operable but the generating units could be made to function on remaining or available power sources; i.e., fuel, oil, wind, water, etc. The analogy here would be much like the preindustrial revolution when towns centered around the availability of water power to turn machinery. Given the parameters it does not appear likely that we will be able to move power any significant distance. Also, given this magnitude of the disaster, the rural nearby police, states and military base may be the appropriate authorities to operate the generation facility and decide how the power is allocated. As only a limited number of needs could be served, decisions would have to be made as to who has access to the power.

In summary, small generation units could be brought on line if the building or area they serve can be isolated. The potential for this isolation and the identification of the area to be served could be the scope of a study. The prioritization of need in these areas could be additional work. Most likely different agencies in each area would have the responsibility to get back on line as proximity to the facility would be a key factor.

For further information I can be reached at (916) 445-6687.

Sincerely,

Frank J. Hahn, Chief
Energy Division

ADDRESS ALL COMMUNICATIONS
TO THE COMMISSION
CALIFORNIA STATE BUILDING
SAN FRANCISCO, CALIFORNIA 94102
TELEPHONE: (415) 557- 3361

RECD
JUL 2 1984

Public Utilities Commission
STATE OF CALIFORNIA

FILE NO.

June 29, 1984

Robyn Boyer Stewart
Project Director
Energy and Emergency
 Preparedness Project
1215 15th Street
Sacramento, CA 95814

Dear Robyn:

In pondering the qualities that an Energy Emergency District might have, I started thinking about who I would turn to now in a moderately disrupting emergency. My first impulse would be to go to my local fire station. After a little more reflection, I realized that the fire station already has many qualities that I think an Energy Emergency District should have:

1. Fairly compact geographical responsibilities - In moderate-to-major disasters, transportation and communications may be severly curtailed, so the basic unit of emergency response should be small.

2. Broad geographical dispersion - Nearly all inhabited areas in California are served by a fire department.

3. Personnel trained to respond to a variety of emergencies - In particular, fire departments must be fairly familiar with the operation of the local gas and electric systems and with the damages presented by breaks in the systems.

4. A sophisticated communications system - Developing and distributing disaster-proof communications systems might be an appropriate action for the federal program. Does the current fire department system allow communications between distant departments?

5. Legal authority to take extraordinary actions - Under existing law, fire department, can, for example, destroy a building to prevent the spread of a fire, commandeer equipment, and trespass on private property. In addition, fire personnel are familiar with the law relating to emergency actions.

6. Favorable public image - The public perception of fire departments is much more positive than the image of police departments or other government agencies. This favorable image is much more likely to produce public co-operation in an emergency.

7. Basic organization is in existence - I think it is desirable to build on existing structures in developing EEDs, rather than creating another layer of government.

8. Potential for handling other problems created by the energy emergency - Although the focus of this project is energy emergencies, we should keep in mind that the events that disrupt the energy system may create other problems, such as threats to health and safety. Ideally, an EED would have the potential to handle accompanying problems, as well as direct energy disruptions.

I hope that these observations are helpful.

Sincerely,

Brian

Brian T. Cragg
Legal Advisor to Commissioner Grew

REC'D

JUL 3 1984

County Supervisors Association of California

July 5, 1984

Robyn Boyer Stewart
Project Director
Energy & Emergency Preparedness Project
1215 - 15th Street, 2nd Floor
Sacramento, CA 95814

Dear Robyn:

A little late but here are my ideas on EED parameters.

1. Geographic Boundaries

   a. Keep as small as possible; increase boundaries in relationship to scope of disaster (i.e., citywide, countywide, regional/multi-regional, statewide.)

   b. Employ existing jurisdictions to maximum degree possible (OES regions or utility regions).

2. Administrative Considerations

   Joint Powers Agreements (JPA) establishing stand-by organization (EED). Agreement should define roles and authorities. Agreed location and backup location should be identified and equipped.

3. Funding

   a. Define in JPA, stand-by operational costs funded locally, capitol costs shared by federal, state and local governments.

   b. Cost of operating in a disaster situation should be reimbursable under state and/or federal disaster assistance programs (include administrative expenses).

4. Function

   a. Pre-Disaster

      (1) Planning

      (2) Resource Inventory and Acquisition

Sacramento Office / #101, 1100 K Street / Sacramento, CA 95814-3941 / 916/441-4011 ATSS 473-3727
Washington Office / 440 First St., N.W., Suite 503 / Washington, D.C. 20001 / 202/783-7575

(3) Simulation Exercises

(4) Priority utility user definition

b. Past Disaster

(1) Critique operation

(2) Re-stock consumed resources

(3) Settle accounts

(4) Plan review, rewrite plan as necessary

5. Scope of Disaster

The disaster defines the response. Functional EED would bring appropriate resources to bear mutual, state or federal assistance requested as necessary.

6. Time Frame

a. Partially determined by scope of the disaster.* Emergency response period gives way to recovery operations. EED returns to stand-by status upon completion of recovery operation and past disaster responsibilities.

b. Public education campaign to inform citizens of their role and responsibility in an energy disaster should be part of the plan. Individual roles are as important as organized rules. Unrealistic expectations and/or unknown expectations by individuals and organizations may cause unnecessary problems or disorder.

7. Organization and Authority Channels

a. Pre-Disaster -- define and diagram as part of the operational plan developed and approved as part of the JPA.

b. Past-Disaster -- review plan and channels for functional effectiveness; correct oversights.

c. Cities and counties have channels identified as part of their existing emergency plans. Enabling legislation may be required to define roles and responsibilities in disasters exceeding jurisdictional boundaries for regional operations.

8. Communication

Existing emergency communications resources activated. (Enhance emergency power generation resources where necessary.)

9. Transportation

Use existing emergency transportation plans and resources.

*Local energy emergency declaration triggers operationalization of EED operations center.

10. What It Manages

a. Priority energy users.
b. Priority water users.
c. Priority transportation users.
d. Priority communication users.
e. Local emergency plans activated to address shelter and sustenance needs.

11. Legal Authority

a. Legislative support for role of utility organization should be enacted.

b. Legislation may be needed to define roles and responsibilities for energy disasters exceeding city and county geographical and financial boundaries.

I believe existing law provides some authority for an energy disaster. However, the question as to whether the utilities are "nationalized" with government assuming their expenses is not addressed; or do priority users pay for service at an emergency rate? Who bears the liabilities for losses suffered by non-priority users when power is available but not to them? I am not sure we addressed a priority scheme for re-powering the city, county or region.

I'm still trying to find a substitute for myself at the conference.

Sincerely,

Jerry Quinn

GERARD J. QUINN

GJQ:js

TO: Ms. Robyn Boyer Stewart
Project Director
Energy & Emergency Preparedness Project
1215 15th Street
Sacto, Calif, 95814

July 21, 1984

ENERGY DISTRICTS

Some thoughts of Elmer F. Kaprielian, Pacific Gas & Electric Company on the subject of Energy Districts.

In the operation of the U.S. Interconnected electrical system network, the term "Energy District" is new.

The idea of "Energy Districts" to deal with the supply of electricity to customers in the period following a major disaster is worthy of consideration.

Individual electric utilities, the National Electric Reliability Council, and Regional Councils such as the Western Systems Coordinating Council have given much thought and attention to the matter of power system emergencies and the restoration of service to customers. A representative of the WSCC should be invited to participate in the "Energy District" study.

The Energy and Emergency Preparedness Project under the California Office of Emergency Services would do well to build upon organization and structures already experienced and in place. As the number of smaller, privately owned generating facilities grow, there may be found some new opportunities to take advantage of these new resources during periods of system restoration.

In California, there exist at least 4 major Control Areas. These are PG&E, So. California Edison, Los Angeles Dept. of Water & Power, and San Diego Gas & Electric. Check should be made to determine if Burbank, Pasadena, & Glendale also operate as control areas. The Calif. Dept. of Water Resources may become a control area at a later time. A control area has the responsibility for the area it serves to meet the load requirements of its customers, continuously work to maintain 60 Hz for the interconnected network & to manage purchases & sales from the control area.

In addition to Control Areas, many smaller electric utilities operate their own distribution systems and are responsible for the service to their custumors during both normal operation and following emergencies.

Almost all electric utilities operate an Operating Control Center manned around the clock by operators normally called "Electric System Dispatchers."

When disasters or emergencies which result in customer outages occur, these electric system dispatchers are best able to identify the problem, the affected area and the numbers of customers without power. They also

know which generators and interconnecting transmission ties may be affected. They have the responsibility of restoring service using what ever resources and facilities are available to them.

Within a very large system such as PG&E, there exists an operating hierarchy which functions as a team during both normal and emergency conditions. These other operating groups include a "Satellite Dispatch Office," "Switching Centers," "Division Operators" and those operators at thermal power plants and attended hydro plants. The link between system dispatcher and Qualifying Facility operator is through switching centers. For administrative matters, PG&E has 13 operating divisions with many of the larger divisions having several districts. Many of these divisions have arrangements with large industrial firms for dealing with emergencies.

There are variations of the above among California's electric utilities. As an example, So. Calif. Edison has 5 administrative regions.

California's electric utilities have extremely fine telecommunications facilities among the individual dispatch offices. These include private redundant telephone facilities in addition to those facilities belonging to Bell.

Individual electric utilities have written emergency plans - portions of these emergency plans are tested from time to time and reviewed and updated as required.

Many cities, San Francisco for example, have emergency operating centers which bring together fire, police & others in public service such as utilities. Tests of these emergency programs are tested regularly.

It would seem that in the study of "Energy Districts" consideration should be given to assure that in any restoration plan, the role of Q.F.s might be examined in order to get maximum benefit from them. Also, that all parties, governmental, investor companies, public utility agencies, the military etc. review the matter of their respective roles in dealing with power system emergencies brought about by disasters & the process of restoration.

AD-A158 277 ENERGY EMERGENCY DISTRICTS: CONCEPTS AND APPLICATIONS (U) CALIFORNIA OFFICE OF EMERGENCY SERVICES SACRAMENTO R B STEWART JUN 85 EMW-83-C-1138 4/4

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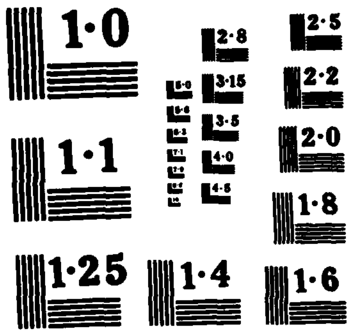

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GOVERNOR

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JUL 6 1984

Plans and Operations
Division

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JUL 10 1984

Robyn Boyer Stewart
Project Director
Energy and Emergency
Preparedness Project
1215 15th Street
2nd Floor
Sacramento, California 95814

Dear Ms. Stewart:

In response to your request for additional input from the June 13, 1984, Advisory Board meeting, I am enclosing the comments prepared by my representative to the Board.

As you are aware, I have assigned Captain John Tait, Naval Liaison to the State Military Department, as my representative to the project. He has strong background in military planning and his civilian endeavors concentrate on development of alternate energy projects. His knowledge in these areas, we believe, will be of great benefit to obtaining a meaningful result from the project's efforts.

Sincerely,

for Willard A. Shank
Major General
The Adjutant General

Enclosure

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Director, Office of Emergency Services

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2 July 1984

Plans and Operations
Division

Energy and Emergency
Preparedness Project
1215 15th Street, 2d Floor
Sacramento, California 95814

Dear Ms. Stewart:

This response to EED model input request is based on initial perceptions from Advisory Board Meeting, 13 June.

The EED concept can serve a real, practical need provided it has current information and has preevaluated the methods for obtaining and distributing these energy resources within an impacted district.

Determination of energy asset allocation in an emergency mode will require advance knowledge of location, quantity, authority to release.

For these EEDs to function, a mutual assistance control structure needs to be developed which will arrange transfer of energy resources between EEDs along with establishing methods of reimbursement. For example, should the severity of the event result in the declaration of a national emergency, FEMA will serve this function for federal energy assets. With the event limited to a response by local/state authorities, there is no known method in place for coordinating this function. In analyzing potential merit and justification for further development of an EED concept, it is necessary to consider existing structures which can be adapted rather than create a new level of control inside existing organizations for emergency management.

Except in isolated cases, alternate energy sources now available and operational in the future will not play a major role in supplying significant power that will have a major impact on the EED concept.

These preliminary comments are necessarily broad and will require further refinement as the project identifies the source of authority under which it will direct and manage the implementation of the EED concept.

Sincerely,

J. H. Tait
Captain
Naval Liaison Officer

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Director, Office of Emergency Services

correg
Adv Bd

STATE OF CALIFORNIA—THE RESOURCES AGENCY

GEORGE DEUKMEJIAN, Governor

CALIFORNIA ENERGY COMMISSION

ARTURO GANDARA
Vice Chairman

July 20, 1984

REC'D
JUL 24 1984

Ms. Robyn Boyer Stewart
Project Director
Energy and Emergency
Preparedness Project
1215-15th Street
Second Floor
Sacramento, CA 95814

Dear Robyn:

I am sorry I had not been able to respond to your earlier request. After considerable thought my "perception" of an Energy Emergency District is unfortunately not very creative but nonetheless I think the only workable one, that is the EEDs should be defined by county boundaries. This is not to say that the EED would be a unit of County government but I would not preclude the possibility at this point in time.

My reasoning is as follows. The number of EEDs should be large enough to capture and address the diversity and variety of California's (or any state's) energy requirements yet the number should be small enough to be manageable. The EED should not be another layer of governmental administration because in an emergency not only would it have to establish its identity and credibility but also compete for jurisdiction. Any EED would have to coordinate or integrate its operations with other governmental units so it is logical that the EED definition should correspond to a political boundary because in an emergency elected officials would be pressured to do something. The county unit would be an appropriate focal point for accountability and administration of relief. Lastly, the county unit is a logical extension of the emergency management administrative structure (FEMA to State OESs to County EEDs).

The challenge, however, would be to avoid the EED unit or function from being absorbed by county government and subject to the stultification that would occur to any function in government that is not providing services on a daily basis or alternatively to make the functions of the EED useful on a continuing basis to the county governments.

While I can elaborate a bit more on the pros and cons of my "perception" of an EED and its qualities I believe the above conveys the essential elements you need at this point in time. I hope that the information is still timely for your use.

Sincerely,

ARTURO GANDARA
Vice Chairman

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The Southern California Earthquake Preparedness Project
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JUL 27 1984

Paul J. Flores
Project Director

July 26, 1984

Robyn Boyer Stewart
Energy and Emergency Preparedness Project
1215 15th Street, 2nd Floor
Sacramento, California 95814

Dear Robyn:

Attached are some proposed ideas and considerations for an Energy and Emergency District. I hope that this information will be of some use to your project. Please accept my apology for the tardiness of this paper. I look forward to our next meeting.

Sincerely,

Cheryl Tateishi
Planning Officer

cc: Paul Flores

encl.

A COOPERATIVE STATE/FEDERAL ACTION-PLANNING PROJECT
California Seismic Safety Commission/Federal Emergency Management Agency

ENERGY AND EMERGENCY DISTRICT MODEL

Scope of Disaster: Occurence of a natural disaster, 8.3 magnitude earthquake along the southern San Andreas Fault. The following information are excerpts taken from Special Publication 60: Earthquake Planning Scenario - For A Magnitude 8.3 Earthquake in Southern California, California Department of Conservation, Division of Mines and Geology, 1982.

Water Supply - Two of the three major aqueduct systems which cross over the fault will be ruptured and supplies will not be restored for a 3-6 month period. Water users in the Los Angeles region will have to rely primarily upon existing reservoir storage and the other aqueduct.

Electrical Power - Power generated at five hydroelectric plants will be shut down. This disruption, along with the projected outages from plants along the coast could cause a loss of 25% of the electrical power generated within the Los Angeles basin. Most of the imported power will be lost, reducing power availability to about 50% of the normal level.

Natural Gas - Natural gas lines located near the fault will be shut down automatically and damage to pumping stations may also reduce gas transmission. Effects will be moderate to minor for the most part. Underground storage facilities will be available to provide gas for users in many parts of the L.A. basin.

Petroleum Fuels - Imported crude oil lines may be disrupted near the fault. Petroleum product pipelines exporting fuels from L.A. may also be damaged. This may result in fires in both areas.

What It Manages: Water supply, Electrical Power, Natural Gas, Petroleum Fuels, Food, Equipment and other emergency resources as needed

Funding: Energy and Emergency Districts may be funded jointly by utilities, cities, counties, state, and the federal government (FEMA-IEMS)

Geographic Boundaries: Energy and Emergency District locations and service areas should be determined according to: EED = population, energy usage and critical facilities on a regional basis

Who's In Charge: Utility companies would have the lead role and responsibility in EED operations. Primary support would come from the County Administrative Office. Secondary support would come from key emergency response agencies throughout the impacted county(s) and cities.

Administrative Considerations: The Energy and Emergency District would be administered by utility companies. Close coordination will need to take place between utility company personnel responsible for emergency/disaster operations and the County Administrative Officer. The County will need to involve appropriate (key response agencies) departments i.e., Sheriff, Fire, Public Works etc. Mechanisms also need to be established to assure communication linkages between EED centers and county EOCs.

Function/Time Frame For EED: Given the information presented in the CDMG Earthquake Scenario, and the projected/estimated damages expected to utility/lifeline systems, Energy and Emergency Districts will need to be prepared and capable of operating within a short notice in the event of a prediction warning and immediately after in the event of an earthquake (24-72 hrs.) EED's could provide an alternate (temporary) source of energy fuels that will be necessary to address some of the immediate affects, outages, and disruptions that will occur and hamper emergency response and recovery operations. These Districts will augment existing utility, local government and private industry planning and can assist planners and coordinators in identifying, inventorying, stockpiling and deploying resources during an emergency. An EED could also assist emergency response organizations (fire, police, sheriff etc.) in identifying potential shelter sites and evacuation areas, based on the energy resources, equipment and fuel availability.

Energy and Emergency District plans for operations should take into account daytime/nightime energy demands, as well as damages projected for varying times of day (FEMA, NSC report). In addition, EED plans should consider long-term preparedness measures, short-term activation measures, emergency response procedures, and recovery measures.

A P P E N D I X

J

COLLABORATIVE PROBLEM SOLVING PROCESS

GENERAL COMMENTS

EVALUATION GENERAL COMMENTS
ON COLLABORATIVE PROBLEM SOLVING PROCESS
DAY ONE

GROUP 1

* Basically a very effective means of laying out alternative programs. Not enough time to make constructive alternative suggestions or modify existing models.

* I believe the process was of superior quality. My one concern is the outcome of the process will be impacted by the selection of participants and grouping.

* The leaders and facilitators of this Project are first-rate professionals. Very fine preparatory work was done prior to this conference. Today was very well run and productive. Verbal briefing should have been given on a.m. of first day reiterating the nature, purpose and exigencies of the collaborative problem-solving process (that is, a specially-tailored motivational talk).

* It would have been helpful to have info bulletins describing structure and operation of existing emergency services agencies.

GROUP 2

* Should have had more utility participation from operating people on the line in problems.

* Think general session not responsive to distinction between the functions required for preparations (including alternative energy development) and those required for disaster operations. Sense a galloping past this point by old hands in disaster work.

* Well organized. Good Interaction!!!

GROUP 3

* Each small group should have an expert on the subject to answer questions. Time spent on procedures distracted from time for solutions.

* Time constraint and multiplicity of interests compromised facilitator and recorder roles. The facilitator and recorder did very well with a tough group to manage.

* It was a very rushed process - need more time to deal with this important subject.

* Felt our group restricted much of focus towards electrical energy.

GROUP 4

* Too much time spent hyping "the process" - it resulted in mucho pretty writing but I'm unpersuaded that the "product" was significantly improved.

* WELL DONE OVERALL

* This is an excellent process for generating ideas and inferfaces. I do not view it as a decision process because it moves too fast. The process generates a high level of expectation - it will take much work to meet those hopes.

GROUP 5

* How do we persuade professional organizations to utilize this process instead of the traditional lecture format for conventions. Think of the power of thousands of people working together in this fashion.

* Good process. I believe it could be better if the participants had participated in defining the problem and narrowing it for our work.

* We ran out of time - too long and too much detail backed into one day.

GROUP 6

* Found the process both interesting and stimulating -- enjoyed the diversity, representation in the group.

* More time was needed to focus on problem definition which would have improved and sharpened discussion later.

* There wasn't any background information which outlined the current plans in place. Thus, a lot of time was spent educating others in the small group informing them of what was there.

* Our facilitator did an outstanding job of holding our group on task particularly when not much interest in EEDs was apparent.

* The conference started with the premise that there was a problem which EEDs could solve. I can't agree with this premise.

GROUP 7

* Serious matters require knowledgeable people, adequate discussion, time for reflection. None of these elements were present today.

* Not enough time spent on using existing structure - was biased in favor of changing existing system.

* Conference process could have been used to generate new ideas not refine five ideas.

* Small group would have been more productive if (a) one individual (negative always) was not there and (b) we had more time.

EVALUATION GENERAL COMMENTS
ON COLLABORATIVE PROBLEM SOLVING PROCESS
DAY TWO

GROUP 1

* I felt the process was worthwhile. Interesting, informative, brings out what is in place and suggests means of improving. Shows the lack of communication among utilities and government.

GROUP 2

* The results of the project are weak, not because of the process but because of the amount of time required to bring people up to speed. Recommend that in the future both written material be sent out and an overview session start the program. The overview should identify existing authorities and constitutional relationships.

* Excellent, but a few things would have made it better and improved process. Needed info bulletins on: CESA summary, and existing utility emergency plans, how the grid works in times of emergency, etc. I thought this was something that would be provided.

* OES is to be commended for taking the "risky" approach to use this process. It's important to make sure everyone who attended is kept informed (assuming they want to be) and that recommendations provided are used. Otherwise credibility is lost and this becomes an empty exercise (my cynicism is showing). Consider follow-up mini-meetings.

* It was very enjoyable and fruitful to participate. I learned a lot and was able to share my experiences with others.

* As a group, we all had a good idea of the process and expectations from us.

* Methodology is weak where the participants don't get a look at the finished product. Our input is very subject to interpretation by someone who wasn't actually there. The final draft needs input by the authors.

GROUP 3

* I have also instigated and planned collaborative problem solving forums regarding various energy and defense issues. Some participants still have cobwebs in their brains, i.e., innate resistance to innovative approaches. Project Director and staff are first-class pros.

* Seems like the "process" somewhat disintegrated on the second day. Need to focus on alternative energy sources and their uses in some later process.

* Well orchestrated.

* Recorder had difficulty understanding concepts and really was almost a hindrance.

* 1. Because we all came from different backgrounds, most of us were unaware of what others were doing. Background on OES, utility emergency plans and MAR's responsibilities could have been helpful. Not details - just a good 5-6 page summary.

  2. The groups were not prepared to deal with "how small power producers can help in emergencies." This merits separate consideration at POLICY level regarding security issues in LT planning. Our group's focused on crises arising in ST timeframe; not where energy should come from as future power, fuel sources are developed. If that was to be the topic, then it should have been stated clearly and a <u>different</u> group invited.

* (This conference was an appropriate way to) At least expedite it (exploring the idea of an EED) and generate the stimulation to follow through.

GROUP 4

* - Two days is too short to do a legitimate job of this task.
  - In this particular experience the facilitators had time and topic assignments that did not mesh well with the variety of private (participant) "agendas" that existed.
  - The whole thing became an exercise in filling up paper, and not one of reaching real consensus.
  - The process is very good for generation of ideas, information and interaction, very poor at capturing critical information necessary to make good decisions.

* Tough job but someone had to do it and it was done well.

* I use this process a great deal in my agency. I work as a facilitator myself.

* Use of professional facilitators was much appreciated--their professionalism contributed to accomplishing much more than if same techniques had been used but with non-trained conference participants or project staff playing the role of facilitators.

GROUP 5

* I sensed the major problem facing the conference was that participants found it hard to accept that EEDs were but <u>one</u> alternative to the broader emergency/energy needs problem. There was strong tendency during the first day to want to discuss/identify/evaluate alternatives to the broader question. This resulted in identifying different "EED models" which in my opinion were <u>not</u> EEDs as I would define them from the background literature provided.

* (The process) forced people to listen carefully to what was being said and eliminated much of the damaging negative comments found in exchanges of this type.

* I think it would have been useful to have provided the emergency services types with more technical information on how the energy system works and the energy and utility people with more information on how the emergency services system works.

* Overall it was a dynamic 2 days with very important networking going on. Thank you for allowing me to participate.

* Great Job!!!

* I am not a strong supporter of this process. Thank you for inviting me.

<u>**GROUP 6**</u>

* I think this process is an excellent way of generating ideas and key issues. However, the hard questions need to be answered some other way. This collaborative process idea is a good brainstorming idea.

* If the process can handle a subject as difficult and emotional as this, it must be worthwhile!!!

* Process suffered to a degree as important <u>informational</u> bits were not available. Not enough utility reps were involved. (The process) seems to not allow for definitive research. This is probably the fault of poor preparation by the participants.

* (The process provides) the opportunity to hear all sides; the opportunity to have a say in the direction of my destiny. They (trained facilitators and recorders) were very good. Thank you for the opportunity to participate.

* <u>Problem</u> - Did not have enough background of how emergency services - OES - utilities - work.

<u>**GROUP 7**</u>

* I salute the effort to be innovative but feel that some inhibitors included:

  - overbalanced representation from emergency preparedness officials
  - not enough attention to small group "mix" of backgrounds
  - time pressures to complete agendas

* I think that this process is a brainstorming process and as such should have been used to start the project off. It does not work well to refine a product. You should have reversed and had this group start with the fact that there is a possibility of losing energy in certain emergency. Then allow the groups to brainstorm ways of getting energy back and how this could be planned for.

GROUP 8

* My prior (collaborative process) workshop experience was not so well handled as it has been at this conference.

* I feel the actual problem should have been defined as to the parameters of the emergency.

  I had the feeling that the points to be considered were on the wall and it was 1, 2, 3, with no time to discuss other issues that were not on the wall.

* One major benefit that could be derived from this conference could be better communication between utilities and government sectors.

* The primary product was the exchange of information between participants which will be valuable at time of emergency. The actual contribution to the research project is questionable because:

  1. Lack of front end information about OES and utilities. Too much focus on small power producers (OK to discuss but keep more in perspective).

  2. Short time to focus (particularly 1st day).

* Good experience. Believe effectiveness is limited to certain types of problem solving.

A P P E N D I X

K

ENERGY AND EMERGENCY PREPAREDNESS PROJECT

FINAL REPORT REVIEW PANEL

ENERGY AND EMERGENCY PREPAREDNESS PROJECT

FINAL REPORT REVIEW PANEL

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CALIFORNIA OFFICE OF EMERGENCY SERVICES UNCLASSIFIED

ENERGY EMERGENCY DISTRICTS: CONCEPTS AND APPLICATIONS, Final Report by Robyn Boyer Stewart, June, 1985, 309 pages, Contract EMW-83-C-1138, FEMA Work Unit 2311-F.

This final report describes efforts to assist FEMA develop and evaluate a number of models of the Energy Emergency District (EED) concept. It also explores applications of the concept for enhancing emergency management procedures. EEDs were initially defined as units of analysis for performing energy resource inventories outlined in an earlier FEMA contract study. The report is divided into four parts: Part I provides background on energy system operations and vulnerability, special district formation, emergency resource management, and on the various private and public organizations who share responsibility for energy resource emergency preparedness. Part II describes the mission, goals, scope, and methods of the California Energy and Emergency Preparedness Project. The Project convened over 100 selected individuals, using the Collaborative Problem Solving Process to design and evaluate the feasibility of forming EEDs. Results and implications are given in Part II. Part III outlines the State Energy Resources Inventory for Coordinated Emergency Planning Program (SERICEP) which would be a co-operative private/public venture for conducting state-by-state energy resource inventories. Part IV suggests further research areas and possible strategies for more thoroughly developing and implementing the EED concept.

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